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COLUMBIA BASIN IRRIGATION PROJECT

HEARINGS

BEFORE THE

COMMITTEE ON IRRIGATION OF ARID LANDS

HOUSE OF REPRESENTATIVES

SIXTY-SEVENTH CONGRESS

FOURTH SESSION

ON

S. 3808

A BILL AUTHORIZING THE SECRETARY OF THE INTERIOR
TO INVESTIGATE AND REPORT TO CONGRESS UPON
THE COLUMBIA BASIN IRRIGATION PROJECT

DECEMBER 6, 7, AND 13, 1922

UNIVERSITY OF CALIFORNIA
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COMMITTEE ON IRRIGATION OF ARID LANDS.

HOUSE OF REPRESENTATIVES.

SIXTY-SEVENTH CONGRESS, FOURTH SESSION.

ADDISON T. SMITH, *Chairman*, Idaho.

NICHOLAS J. SINNOTT, Oregon.

CARL HAYDEN, Arizona.

EDWARD C. LITTLE, Kansas.

C. B. HUDSPETH, Texas.

JOHN W. SUMMERS, Washington.

JOHN E. RAKER, California.

HENRY E. BARBOUR, California.

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E. O. LEATHERWOOD, Utah.

WILLIAM B. BANKHEAD, Alabama.

WILLIAM WILLIAMSON, South Dakota.

SAMUEL S. ARENTZ, Nevada.

MANUEL HERRICK, Oklahoma.

A. R. HUMPHREY, Nebraska.

COLUMBIA BASIN IRRIGATION PROJECT.

COMMITTEE ON IRRIGATION OF ARID LANDS,
HOUSE OF REPRESENTATIVES,
Wednesday, December 6, 1922.

The committee met at 10.30 o'clock a. m., Hon. Addison T. Smith (chairman), presiding.

There were present before the committee: Hon. J. Stanley Webster, a Representative in Congress from the State of Washington; Mr. Francis M. Goodwin, Assistant Secretary of the Interior; Gen. George W. Goethals, consulting engineer, Columbia Basin survey; Mr. J. B. Beadle, assistant to the Director of Reclamation; Mr. Ivan E. Goodner, chief engineer, Columbia Basin survey, and Mr. Fred A. Adams, supervisor, Columbia Basin survey, State of Washington.

The CHAIRMAN. The committee will come to order. Senate bill 3808, authorizing the Secretary of the Interior to investigate and report to Congress upon the Columbia Basin irrigation project, will be taken up for consideration this morning. We have with us several gentlemen who are well informed in regard to this project, among whom is General Goethals and Assistant Secretary of the Interior Mr. Goodwin.

Mr. HAYDEN. I suggest, Mr. Chairman, that the bill and the Secretary's report be printed in the record.

The CHAIRMAN. I was just going to say that the bill is short and I will read it, and then read the report of the Secretary of the Interior, to whom the bill had been referred for his views. The bill is as follows:

[S. 3808, Sixty-seventh Congress, second session.]

AN ACT Authorizing the Secretary of the Interior to investigate and report to Congress upon the Columbia Basin irrigation project.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior is authorized and directed to investigate and report as early as possible, and not later than the 1st day of January, 1924, on the essential features of the proposed Columbia Basin irrigation project referred to in the act of the Legislature of the State of Washington entitled "An act providing for the survey of the Columbia Basin irrigation project, creating a commission therefor, defining its powers and duties, and making an appropriation, and declaring that this act shall take effect immediately," approved March 1, 1919, in the following particulars:

Its water supply and the permanency and sufficiency thereof; the approximate watershed from which said water supply is to be derived and what, if any, natural reservoirs, such as lakes, are available for the storing of surplus waters for the irrigation of the land, the reclamation of which is contemplated by the said act, and any other lands capable of being irrigated by the waters to be conserved through such project in the said State of Washington or any other State; the character of the climate as it affects the agricultural development of the said land; the transportation facilities available therefor; the prospects and means of settlement; the engineering features of the proposed project, stating point of diversion of the water to be used in the said project and from what streams; the principal dam or dams which may be needed therefor and the general location, nature, length, and character of such aqueducts or canals as may be necessary for conveying the water to the lands to be irrigated thereby; the cost and feasibility from an engineering and physical standpoint of such work as may be required to accomplish the purposes of the said project, both in the aggregate and the ultimate cost per acre to the land to be benefited thereby; and the views of the Secretary of the Interior as to the general benefits to be derived from the completion of the said project in the way of markets for manufactured products, of increased agricultural production, of opportunities for home building, and the effect of the same, both upon the communities immediately affected and upon the Nation at large, and such other matters as in the judgment of the said Secretary may be of importance and pertinent to the proposed development.

SEC. 2. That for the purpose of carrying out the provisions of this act there is hereby authorized an appropriation, from any money in the Treasury not otherwise appropriated, of the sum of \$100,000, to be expended under the direction of the Secretary of the Interior in making such investigation, studies, and report.

The bill was referred to the Secretary of the Interior by the chairman of the committee on the 22d of November, and I have his reply as follows:

NOVEMBER 28, 1922.

MY DEAR MR. SMITH. Replying to your letter of November 22, I heartily approve of the legislation proposed in S. 3808, authorizing investigation of the Columbia Basin irrigation project. The State of Washington has expended \$150,000 in an investigation of this project under an enactment that contemplates later reference to the United States.

The benefits and values that would be created by the irrigation of this large tract demand a determination of the feasibility of the project by the United States, and for this reason a substantial sum is necessary.

In addition to the assimilation of data obtained by the State of Washington, there yet remain a number of matters requiring further investigation and consideration to enable me to prepare report contemplated by S. 3808. The amount named is necessary for this purpose and I hope the measure will become law.

Respectfully,

ALBERT B. FALL, *Secretary.*

HON. ADDISON T. SMITH,

*Chairman Committee on Irrigation of Arid Lands,
House of Representatives.*

The CHAIRMAN. Judge Webster, do you wish to make any statement?

Mr. SINNOTT. Has there ever been any other hearing on this subject?

The CHAIRMAN. No; not before this committee. The bill was before the Senate committee and hearings were held on July 10 last, printed copies of which are available. There is also before the committee the report of George W. Goethals & Co. on the project, and also report of the Columbia Survey Commission of the State of Washington.

STATEMENT OF HON. J. STANLEY WEBSTER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON.

Mr. WEBSTER. Mr. Chairman, answering your question, I should like to make a very brief statement in connection with this bill.

As the Members already will observe, the bill merely authorizes an appropriation; it does not make a direct appropriation. It is not necessary for me to enlarge upon the rules regulating the powers of the legislating committees of the House of Representatives or the powers of the Committee on Appropriations. You will readily see that we would have no standing before the Appropriations Committee in any effort to secure this appropriation without in advance having secured an authorization, this being a new project.

We also realize that we have the laboring oar in convincing the Appropriations Committee in the first instance, and the Congress ultimately, that this appropriation is justified, but in order to have any standing before that committee in that undertaking it is necessary to have this authorization bill passed.

We do not intend to call a great array of witnesses before your committee; rather we expect to have a small array of great witnesses. We have Assistant Secretary Goodwin, of the Interior Department, who will represent Secretary Fall, and who is quite familiar with this project. He was designated by the Secretary of the Interior to go over the project and get such facts and data as were necessary to enable the Secretary of the Interior to report intelligently concerning the wisdom of the passage of this bill, and he is peculiarly in a position to give the committee essential information.

We also have General Goethals, who was employed by the State of Washington to go over the project and make a personal inspection and survey of it. It is not necessary for me to pause to speak further of this than to say that General Goethals is present and will testify at length in the premises.

We also have Mr. I. E. Goodner, the State irrigation engineer of the State of Washington, who is an expert in irrigation engineering matters, as well as in the general aspects of irrigation, and who can give the committee detailed data and the benefit of his personal connection with the project from its very inception.

We also have Mr. Fred A. Adams, who is the supervisor of the Columbia Basin project under the laws of the State of Washington. He will be in a position to give the committee any general information concerning the measure that the committee may desire.

I should like, if I may be permitted to make the suggestion, to say that we would prefer to have Mr. Goodwin called first, then have General Goethals, then Mr. Goodner, and finally Mr. Adams.

We endeavored to secure the presence here to-day of Director Davis of the Reclamation Service. He was in the West at the time but contemplated returning to the Capital on the 4th of this month. Later his plans necessarily were altered and he will not be able to return until Sunday of next week. If the committee desires his presence we can arrange to have him come at a day which will be suitable to your convenience.

When the bill was under consideration in the Senate, Director Davis appeared and testified, and his testimony is reported at length in the printed hearing of the Senate committee.

Mr. Beadle, the assistant to the director, is present to represent him and can perhaps give the committee assistance if you care to have it from that source.

I think at this time, Mr. Chairman, I shall not take further time of the committee.

The CHAIRMAN. We will now hear Mr. Goodwin, Assistant Secretary of the Interior.

STATEMENT OF HON. FRANCIS M. GOODWIN, ASSISTANT SECRETARY OF THE INTERIOR.

Mr. GOODWIN. Mr. Chairman and gentlemen, I want first to express the regret of the Secretary that he could not be present in person to explain his reasons for indorsing the passage of this particular measure, but he is tied up over in the Appropriations Committee on something else which he considers of great importance at the present time.

I might also say, however, that the Secretary asked me to come over and represent the department, and to speak for him as well as myself in this matter. I believe it would be fitting and proper as a general introduction to this proposition to say that the Columbia Basin is simply a part and a parcel of a general reclamation program in which the Interior Department is interested.

As you are aware, the Interior Department has approved the passage of other measures.

Mr. SINNOTT. What do you mean by the "passage of other measures"?

Mr. GOODWIN. I will refer to that in just a minute. Of course, the Interior Department has been heartily in favor of the continuation of the present reclamation policy, which will probably bring into reclamation a million or more acres ultimately.

We have also, I believe, indorsed the Smith-McNary bill, a general reclamation policy for smaller projects.

We have, also, as I recall, indorsed or made a favorable report—perhaps that would be a better statement—with reference to the Colorado Basin, another project which will perhaps bring into irrigation ultimately, if it is carried out, a couple of million acres of land.

Then finally the Secretary has indorsed the Columbia Basin project, another project which will, if adopted and successfully carried out, bring into reclamation probably more than 2,000,000 acres of land. This is part of a general policy. There is no conflict between these propositions in any sense whatever.

I might state generally that I think the reason back of this can be very readily seen. It is apparent that during the past few years that there has not been much additional acreage placed under cultivation in the United States. It has been estimated that the increase in population—that is, the normal rate birth over the normal death rate, exclusive of any immigration, for the United States, is $1\frac{1}{4}$ per cent. On that basis in the next 20 years we will have an increase in population in the United States of somewhere from twenty-five to thirty millions. In order to care for those twenty-five or thirty millions, on the basis of the past experience and on the basis of past production, it would be probably necessary to put under cultivation a very large acreage, estimated as high as 6,000,000 acres per year. You may cut that 6,000,000 acres in two on account of the fact that a portion of the present acreage not now cultivated will be cultivated in the future, and intensive cultivation may cut it down still more. Reduce your acreage to the minimum of a million acres per year, and in the next 20 or 25 years it will require a tremendous acreage of twenty to twenty-five millions to produce the food supply for the normal increase in the population of the United States.

In addition to that, I might call attention to the fact that Secretary Hoover recently in a speech before a convention at Boston made the statement that the United States is going to be called on for many years to come to provide a very large food supply for Europe. In fact, he estimated that 60 per cent, I believe the figures were, of the total exports of the United States for some years would probably be food supplies. This

statement is borne out to some extent by the recent publication by the Department of Commerce of the statistics for the year ending June 30 last, wherein it appears that notwithstanding a depreciation in the value of these commodities of exported something like \$600,000,000 the quantity for that fiscal year was greater than the preceding fiscal year. It is Mr. Hoover's estimate that until Russia is again put on her feet, which will be a slow process, even under favorable conditions, there will be a heavy demand upon the United States for food supplies. So that the basis of this reclamation proposition is the demand and the necessity for increasing the area of agricultural lands under cultivation in the United States, and it must come out of our abandoned farms, our logged-off lands, our swamp lands, or our semi-arid desert land in the Far West.

I believe the agricultural interests are beginning to appreciate this themselves. I noticed a little memorandum here on the table with reference to a resolution passed at a recent national convention of a farmers' organization in the United States, unanimously recommending the passage of the Columbia Basin bill, which is now before you for consideration, on that very ground.

So at the present time there is need of a vision of the future agricultural needs of the United States, just as 20 years ago when you started the reclamation policy, which has resulted in something like 2,000,000 acres being actually placed under irrigation under Federal project. There is need now for a bigger program and a wider vision, and the basis of it is the demand for additional agricultural lands, and, in the opinion of the Secretary of the Interior Department, the most feasible place at the present time to begin work on this program is to continue the use and the maximum use of the organization that has already been built up by Congress, the Reclamation Service, for the purpose of reclaiming all possible semiarid lands in the West. The Columbia River Basin is one of those projects.

Last summer I had the privilege of going over this project. I spent a month examining into a good many details. I went over this tremendous watershed that is shown over here in Montana and Idaho [indicating on map], running up into British Columbia. I went down the old route that was followed by the Lewis and Clark Expedition, down to Spokane, down on to the land, over it; I went up on a high bluff at one end of this project where I could get a bird's-eye view of it, and then went on to the coast, and the more I saw of the project the more the report prepared by the State of Washington appealed to me. I just want to refer very briefly to some of the general features of it, leaving all the details for the engineers, who are much more competent to speak on such features of it.

Mr. SINNOTT. Out of what funds were your expenses paid on this examination?

Mr. GOODWIN. Out of the contingent fund.

Mr. SINNOTT. That is the \$100,000 appropriation?

Mr. GOODWIN. Yes.

Mr. SINNOTT. In the Interior bill?

Mr. GOODWIN. Yes.

Mr. SINNOTT. That is for investigation of secondary projects?

Mr. GOODWIN. I think that is the purpose of it. Mr. Beadle can tell you about that.

Mr. BEADLE. I think it was the contingent fund for the Department of the Interior, not for reclamation. You refer to the reclamation fund?

Mr. SINNOTT. Yes; I am referring to the annual appropriation that we make for examination.

Mr. GOODWIN. No; it did not come out of that.

Mr. SINNOTT. It was not out of the reclamation fund?

Mr. GOODWIN. No.

Mr. RAKER. Let me ask you this question, Mr. Goodwin: Why could not the Department of the Interior, through the Reclamation Service, make all these examinations, if the contingent or the secondary appropriation was large enough?

Mr. GOODWIN. Well, they could, if it was large enough, but at the present time every available dollar is doing duty; in fact, the money is insufficient.

Mr. RAKER. I know, but what I mean is this: The committee could make that a million dollars as well as \$100,000.

Mr. GOODWIN. Undoubtedly they could.

Mr. RAKER. And then if the Reclamation Service desired to make an investigation of a project of this kind, it would be authorized under the law to do so.

Mr. GOODWIN. There is no question but what that could be done if it was broad enough. The situation as I see it is simply this: That this is a project—

Mr. RAKER (interposing). What do you mean by "broad enough?" I would like to know the distinction between a large project and a small one. Now, just what is the difference?

Mr. GOODWIN. This is the distinction that the Secretary had in mind, and the reason this bill was proposed: That the entire irrigated area for 20 years' reclamation service is less than this one single project. If this project is taken up by the United States it would involve an advancement of some sort of a good many million dollars, running up perhaps to \$250,000,000 ultimately before the project could be fully developed. It is a project of such magnitude in one single item involving as much as that of 20 years' actual work, that it ought to be taken up separately and submitted to the committees of the Congress and have the approval of the Congress to this extent before anything should be done in the way of expenditure of money, especially in view that if it is not followed up it would mean a loss of those particular funds.

Mr. RAKER. Is it the viewpoint of the department that these appropriations should be added to and a thorough investigation made, that eventually this shall become a Government reclamation project?

Mr. GOODWIN. That is the proposition.

Mr. RAKER. And the funds reimbursable?

Mr. GOODWIN. Reimbursable funds. That is the proposition.

Mr. SINNOTT. What is the size of this contingent fund you referred to?

Mr. GOODWIN. I do not recall that, Mr. Sinnott.

Mr. SINNOTT. What was your expense account?

Mr. GOODWIN. Something like \$150 or \$160, outside of transportation.

Mr. RAKER. How would we be able to get you out in other parts of the West to make investigations?

Mr. GOODWIN. Well, you might influence the Secretary to send me out there. I am not averse, once in a while, to making investigations, particularly in California. [Laughter.]

Mr. RAKER. That sounds all right.

Mr. SUMMERS. Especially in the winter season. [Laughter.]

Mr. GOODWIN. I just want to call attention to a few of the general features that I met up with. You will notice in looking at this map that there are four transcontinental lines already traversing this area. In addition I found roads or highways already built; I found conditions ready for actual settlement, matters which under the ordinary irrigation project—

Mr. HUDSPETH (interposing). You say transcontinental railroads?

Mr. GOODWIN. Yes; the Northern Pacific, the Great Northern, the Milwaukee, and the Union Pacific. Then you will notice they are traversed north and south, as well as east and west, by railroads.

Then there was no question in my mind about the climatic conditions or about the soil. You will notice right to the west is the Yakima project with which you are all very familiar, a project of 100,000 acres approximately.

The soil on this particular project, according to the analysis, is of the same general nature as the Yakima soil, and within this project there are a number of small irrigated tracts, principally by pumping, which show that the soil will produce very abundantly.

Then a little to the northwest is the famous Wenatchee district, closely bordering on the northwest edge of the Big Bend territory.

Then down below is the Sunnyside district, running down to Wapato. Part of this is within the Indian reservation. So the territory around it has been tested by actual production of a variety of crops.

Mr. RAKER. The pink section there, which is practically a reproduction of the map of Texas, is the land to be irrigated, is that right?

Mr. GOODWIN. That is the large body of land. Then right here, north of Spokane, is another small body of approximately 60,000 acres. The area, of course, is not near so large as the State of Texas. The entire area is about 3,000,000 acres.

So that, as far as one can judge by general conditions, the transportation, the soil, and the climate, and the production of a variety of crops is absolutely an assured fact.

Mr. SINNOTT. Is that larger than this map? This, I see, gives the figures 1,750,000.

Mr. GOODWIN. That is the proposed irrigable land under the gravity system. That is embraced within the 3,000,000 acres.

On the smaller map, marked in blue, is the 1,753,000 acres.

Mr. SUMMERS. And these are tracts that are not irrigable [indicating]?

Mr. GOODWIN. Those yellow tracts are the ones that they have not taken into consideration at all.

Mr. SINNOTT. The entire area is 3,000,000 acres, but the irrigable area is 1,753,000 acres?

Mr. GOODWIN. Yes; by the gravity system. I will refer to that in just a minute.

The CHAIRMAN. These colors represent the land that can be irrigated by pumping?

Mr. GOODWIN. The pink; yes. The green over there—I suppose that is green—I may be color blind—is the 1,753,000, the pink is some three hundred odd thousand which can be irrigated by pumping out of the ditches or reservoirs of the gravity system, and the yellow embraces land not considered because not as high class as the pink and green, some of which, however, is susceptible of irrigation and can be used for grazing and other purposes.

In fact, in my opinion, one reason for asking for this appropriation is to ascertain if there can not be added a very large area to the State's estimate, which is very conservative. In making its estimate the State included only lands estimated to bear a total cost, of at least \$200 per acre to place under reclamation and dispose of to settlers.

Mr. HUDSPETH. Is this all Government land?

Mr. GOODWIN. No; my recollection is that about 5 per cent of it is public land, about 5 per cent of it N. P., about 4 per cent belongs to the State.

Mr. HUDSPETH. What do you mean by "N. P."?

Mr. GOODWIN. Northern Pacific Railroad. And the rest is in private ownership. About half of the privately owned land I think is in small tracts and the other half averages a little over a section.

Mr. SINNOTT. Let me get that again. How many acres will you irrigate by pumping?

Mr. GOODWIN. 1,753,000 acres, according to the State's estimate, by gravity without pumping. Then there are several hundred thousand acres additional by pumping from the ditches under the gravity system. Then there is an additional acreage outside, of not as high class land, some of which will come under gravity and some under pumping.

Mr. SINNOTT. I suppose someone here can give us exact figures?

Mr. GOODWIN. I think Mr. Goodner can give you those exact figures

So to my mind, as far as general facts as to this irrigation project are concerned, the situation is most favorable. It is a favorable situation from the tested viewpoints established by the reclamation policy of the United States.

Mr. SINNOTT. How do the elevations compare with the elevations at Sunnyside?

Mr. GOODWIN. The elevations run a little lower at some points than at Sunnyside. they run from about 2,000 down to 500 feet at Pasco.

Mr. SINNOTT. What is Sunnyside?

Mr. GOODWIN. I do not know. Mr. Goodner, do you know?

Mr. GOODNER. It ranges from 600 up to 1,000.

Mr. SINNOTT. Sunnyside does?

Mr. GOODNER. Yes.

Mr. SINNOTT. What are the maximum elevations in the Columbia Basin?

Mr. GOODWIN. The elevation for the irrigable land runs under 2,000 down to 500. Mr. Goodner can give you those exact figures.

Mr. SINNOTT. What is the rainfall there?

Mr. GOODWIN. About 7 inches, I think, on an average.

Mr. RAKER. Do you not mean there at Walla Walla it is only about 500 above sea level?

Mr. GOODWIN. It is about 500 at Pasco. That is down on the Columbia River. Another proposition that I was quite interested in, and of course we are all, is the water supply and the problems that grow out of that. You will notice a number of large lakes here [indicating on map].

Now, the proposal of the State is to store water in Flathead Lake in Montana and in the Pend Oreille Lake in Idaho. There is also a proposition to store water in Priest Lake in Idaho, which is also tributary to the Pend Oreille River, but this was not considered by the State and is one of the matters requiring further consideration and investigation, for this reason: There is a tremendous amount of water power which can be developed from these streams. The development of this project will create a demand for power development as well. It is estimated, I believe, that there is something over 2,000,000 horsepower possible of development in connection with these waters. That is theoretical horsepower. I do not know what it actually will be. The question of storage would have something to do with power development, as it would provide a larger water supply at the low-water season for that purpose, the low-water season coming after the irrigation season has closed, along in December and January. There is a possibility of this working out in harmony for the mutual benefit of both. There would be ample storage in the two lakes, Flathead and Pend Oreille, according to the figures prepared by the State, something like 2,500,000 acre feet, coupled with the normal flow to provide abundant water, not only for lands in the Columbia Basin in Washington but for any that may be irrigate in Montana or elsewhere. In Montana I found in the vicinity of Kalispel that there is in the neighborhood of 150,000 to 300,000 acres, according to the State engineer—his estimates varied—that can be probably placed under irrigation.

Montana proposes storage on some of the tributaries to the Flathead Lake to care for this acreage. I believe an investigation of this proposal is contemplated under the provisions of this particular bill and is one matter that should be further investigated so as to provide the maximum use of these waters, not only for this particular proposition but for any other irrigation proposition anywhere in the vicinity of these waters.

Then, in that connection is the question of power development, about which I have spoken. Since I made my trip the Federal Power Board has made a report upon the use of the waters of the Columbia River. The said board concedes that irrigation has first place over power, and the reason for that is very apparent: This water has run to waste for years and years and will continue to do so for years yet to come so far as power is concerned unless there is a market for it. The only real project that would develop a market for the consumption of this power is the Columbia Basin proposition. It would provide not only a market for local consumption of power, but the additional traffic with all parts of the United States would create further demands for power for transportation.

You are perhaps aware that the Yakima country alone, a year ago, I think it was, developed something like 17,000 carloads of freight, carrying the products to every part of the United States and bringing products and manufactured articles from every part of the United States to that section. The Yakima project is many times smaller than the proposition known as the Columbia Basin, and the latter would mean a tremendous volume of freight and a tremendous volume of business to every portion of the United States. To carry that freight will create a market for power. The Milwaukee, as you know, is now electrified, and the other railroads will probably be electrified. The Columbia Basin project will thus develop a market for power and help to develop that resource as well as irrigation of arid lands. I believe the investigation of power is contemplated by this measure in order that the irrigation proposition may get the benefit of any such possible power development which might properly be associated therewith, taking into consideration, of course, the vested rights that have already accrued along these waters.

So that as far as the water proposition is concerned, based on statistics gathered by the Government as to rainfall and stream flow, covering, I believe, from 19 to 30 years, the facts are ample to justify the statement that there is ample water for the needs of everybody. The State's computations, I may add, were based on the use of water in the Yakima Valley, where the same character of land is found.

MR. RAKER. What is the heavy blue line there? Is that intended to be the exterior boundary of the water shed?

MR. GOODWIN. Yes; that is the exterior boundary of the water shed.

MR. RAKER. That only runs around to the upper portion.

MR. GOODWIN. There is a little part of it that runs up into Canada; the rest of it is in Montana and Idaho, and a little portion of it over in Washington, in the Kaniksu Forest Reserve.

MR. RAKER. But none of the territory west of that line is included?

MR. GOODWIN. No.

MR. RAKER. Nor north?

MR. GOODWIN. Nor north.

MR. RAKER. Do you contemplate providing in this investigation an investigation of the flow of water in and about the Flathead Lake and within this watershed territory, as to water for irrigation and for electric development, and still supply the Columbia Basin tract of land?

MR. GOODWIN. Yes, there is ample water for all those purposes and to permit the normal flow to continue down the Columbia into this little bend of the river on our Canadian frontier [indicating on map]; so that Canada will still have the normal flow of water at the low-water season.

The Columbia River proposition as it stands—this is a matter you are familiar with—has a flow greater than that of the diversion dam at Yuma on the Colorado according to the figures in the Federal power report.

MR. SINNOTT. What is the outlet of the Flathead Lake?

MR. GOODWIN. The Flathead River, flowing down this way [indicating].

MR. SINNOTT. Where does that flow to?

MR. GOODWIN. Into Clarks Fork, into the Pend Oreille Lake, out of the Pend Oreille Lake into what is known as the Pend Oreille River and then into the Columbia.

MR. SINNOTT. Pend Oreille—what is the outlet of that?

MR. GOODWIN. The Pend Oreille River. Here is Clarks Fork running into Lake Pend Oreille [indicating] and then the Pend Oreille River running into the Columbia and on down to Portland.

Mr. RAKER. Then you do not take any water at all west of the Pend Oreille Lake, do you, except at the diversion point here?

Mr. GOODWIN. Under the gravity system the proposed diversion point is right here [indicating].

Mr. RAKER. That is what point, now?

Mr. GOODWIN. That is at Albany Falls, right across the Idaho line.

Mr. RAKER. And all that territory west is not used as a water shed at all for this system?

Mr. GOODWIN. No; the flow into the Columbia River that would be used all comes east of that.

Mr. RAKER. What is the reason there is none of that water used west of there?

Mr. GOODWIN. Because it flows into the Columbia River beyond the point of diversion.

Mr. RAKER. There is no chance to take it up again?

Mr. GOODWIN. No; the only chance of taking that up is the proposition of building a dam in the Grand Coulee and lifting the water some 500 feet or more, and then carrying it to the land from that point.

The State has adopted the gravity proposition for the reason that it brings in more acreage; that there are no unusual engineering propositions that have not been solved in other reclamation propositions; that the cost of maintenance is lower and there is less liability of a breakdown. As to the pumping proposition, however, there is still some question and that is one of the matters that will have to be settled by the report contemplated by this bill, so there will be no dissatisfaction as to the selection of gravity as against the proposed pumping proposition.

Mr. RAKER. After you get all this surveying done and estimated, what arrangements have you now or what steps have you taken—that is, the State of Washington and these people interested—so as to know when you get through that they will have a water right as against any subsequent development in Montana and in Idaho?

Mr. GOODWIN. All these waters have been reserved for this purpose.

Mr. SINNOTT. They all flow into the Columbia River?

Mr. GOODWIN. They all flow into the Columbia River, yes, sir; a navigable stream.

Mr. RAKER. How do you mean they have been reserved?

Mr. GOODWIN. The Federal Power Commission has covered that matter fully in its report, and this report concedes that over and above all the vested rights that may have accrued for power purposes there is ample water for all purposes.

Mr. RAKER. You do not quite get me. That may all be true, but somebody will come in later, private individuals and otherwise, and what effort has the Government made or Government officials or the State of Washington to get a prior right to dispose of this water?

Mr. GOODWIN. I do not think the State has made any appropriations of water, because there is no method by which that could be done.

Mr. RAKER. But they could make application.

Mr. GOODWIN. Nothing has been done—nothing that I know. This water is simply available and will be disposed of by the Federal Government if this proposition is carried out. There may have been some appropriation made, but none that I know of.

Mr. RAKER. I do not quite get you as to how the Federal Government can dispose of the water claims in Montana and Idaho.

Mr. GOODWIN. You mean under the State laws?

Mr. RAKER. Yes.

Mr. GOODWIN. There are no appropriations in conflict at the present time, and there could be no appropriations made under either the Idaho or the Montana or the Washington State laws which could be carried into effect, because there would be no beneficial use. The projects are too large for any private individual or private organization to undertake.

Mr. SINNOTT. Don't those States generally give preference to the use of water for irrigation purposes over power?

Mr. GOODWIN. Yes, sir.

The CHAIRMAN. Mr. Secretary, this project was formerly known as the Big Bend project 10 or 15 years ago?

Mr. GOODWIN. That was just a portion of this particular project; the land is now embraced in this, and the data covering that is included in the State's investigation.

Mr. SINNOTT. Where is the Horse Heaven project?

Mr. GOODWIN. That is down in here some place [indicating on map].

So much for the water and power end of it, unless there are some other questions.

Now I want to refer to another proposition which I have already indicated, and that is the question of cost. The question of additional acreage also requires further investigation, as I have stated. In connection with that, I may say that State engineers

have made a survey of the Columbia Basin project at a cost of \$150,000, including explorations for the dam site proposed at Grand Coulee, and the running out of levels.

Mr. SINNOTT. Where is that dam site?

Mr. GOODWIN. That dam site will be right in here in the Grand Coulee [indicating]. That is for the pumping project. This is the gravity project.

Mr. SINNOTT. At Newport?

Mr. GOODWIN. Yes, at Newport, or right beyond. In making its surveys, the State ran out the levels and I do not think there is any question about the amount of land of a highly desirable character coming under the project. Under the State's plan and estimates water will be carried to every 40 acre tract, something which has not been done under all the Federal reclamation projects. So that it is very difficult under the present figures to compare the estimated cost with Federal projects. One of the things to be done if this bill is passed and the money is made available, is the assimilation of all the data prepared by the State, so as to compare it and make a proper analysis for the consideration of Congress as to the cost per acre and obtain any data necessary to fill any gaps that may exist in the State's data to comply with the Federal standards.

Mr. RAKER. Roughly speaking, what has been the estimate as to the entire cost of this project, including dam and canal, without the smaller laterals?

Mr. GOODWIN. I think General Goethals's estimate was \$145 an acre for the 1,753,000 acres, which would be something like \$250,000,000.

Mr. GOODNER. That includes the lateral system, carrying the water onto the lands in every instance.

Mr. RAKER. The State has appropriated about \$150,000—the State of Washington?

Mr. GOODNER. Yes.

Mr. RAKER. That money has been used?

Mr. GOODWIN. That has been expended in making these surveys and investigations.

Mr. RAKER. What is the State going to do to meet the proposed authorization of \$100,000 by the Federal Government?

Mr. GOODWIN. The State made their appropriation, as I understand it, for the purpose of making the preliminary investigations, obtaining all this data to submit to the Federal Government, then leaving the matter in the hands of the Federal Government. So far as I am advised, they do not propose to duplicate this in any way for the purpose of completing the investigation.

Mr. RAKER. They will not meet them fifty-fifty?

Mr. GOODWIN. No; I think they consider they have already expended their "fifty" on it by the \$150,000.

Mr. RAKER. What have they done that would be available for the Government engineers?

Mr. GOODWIN. They have made a complete survey and have obtained all the data as to the water supply. That is available. They have run out all the levels for this entire area in detail for every tract of land. That is available. They have run out the proposed lines of diversion, not only for the main canals, but some of the smaller canals; they have partly investigated secondary storage and have a large mass of other data available.

Mr. SINNOTT. What is going to be the size of the farm unit?

Mr. GOODWIN. I imagine in the neighborhood of 40 acres.

Mr. SINNOTT. Is the Reclamation Service now providing for the delivery of water to each unit?

Mr. GOODWIN. They are at the present time, but they have not in the past, and it is hard to compare figures on that basis. In addition the State has explored the dam sites by borings—they have all the available data for that. They have all the data as to the climate, the rainfall, the production, and things of that sort, all of which is available.

So that at the present time, in my opinion, what remains to be done in the way of investigation includes the lands in Montana, the possible storage in Priest Lake—

Mr. SINNOTT (interposing). You mean the land in Montana for irrigation?

Mr. GOODWIN. For irrigation, outside of this area. The possible storage at Priest Lake; the amount of this particular area here right north of Spokane, which is not included in that 1,753,000 acres; the question of secondary storage within the project itself, which has not been completed, for the purpose of carrying water at flood season for storage on the land, so as to enable a reduction to be made in the size of the main canals, thus reducing the cost of the project.

Mr. HUDSPETH. At what depth did you secure water by boring?

Mr. GOODWIN. They bored right down by the Columbia River for the purpose of exploring the dam site there, not for the purpose of securing water.

Mr. HUDSPETH. Not for pumping purposes?

Mr. GOODWIN. No, they had to put in a dam some 200 feet high and then lift water some 400 feet into a lake, an artificial lake, and carry it from there to the land under the pumping proposition. In addition, some investigation and report is required on the proposed settlement proposition.

Mr. SUMMERS. The State has also examined the soil in every section of land in the project.

Mr. GOODWIN. Yes, they have included every section of land and have complete data and reports covering that proposition.

Mr. HAYDEN. They have a soil survey.

Mr. GOODWIN. So it is to assimilate that data, to fill in the gaps, that the Secretary has asked this appropriation be made, so that complete data will be available for a report to the Congress in due course with such recommendations as are proper in the premises for future legislation.

Mr. SINNOTT. Is any of that land in cultivation now, the area in pink?

Mr. GOODWIN. Down in this country [indicating] a part of this land has been cultivated at different times by dry farming, but as I drove over it I came to one after another, almost a continuous stream of abandoned farms that had been failures. From a high point near Corfu I could see a large area of this land, and it looked like a checkerboard where the land had been cleared of sagebrush but since abandoned.

Mr. SINNOTT. Is that 640-acre land?

Mr. GOODWIN. These lands were mostly entered under the old homestead law, 160 acres, and some desert land, 320.

Mr. SINNOTT. If it were not taken up, would it be land susceptible of 640 entry, in the absence of the irrigation possibilities?

Mr. GOODWIN. Yes. Of course there is only 5 per cent, as I say, of the total area still public land, and very few tracts of that size within it.

Mr. SINNOTT. What is it, sagebrush land?

Mr. GOODWIN. Sagebrush land.

Mr. SINNOTT. Any bunch grass on it?

Mr. GOODWIN. Yes; the bunch grass grows very luxuriantly in places.

Now, I think I have covered the subject. If there are any further questions, I will be glad to answer them if I can; otherwise I think these other gentlemen can give you details much more readily than I can.

The CHAIRMAN. General Goethals will now address the committee.

STATEMENT OF GEN. GEORGE W. GOETHALS, CONSULTING ENGINEER, COLUMBIA BASIN SURVEY.

General GOETHALS. Mr. Chairman and gentlemen, I was employed by the State of Washington to make an investigation of the Columbia Basin project to determine its feasibility and cost—feasibility so far as the engineering structures are concerned.

I went over the area, though I had been over it before, and checked up all the data that had been obtained by the State and all the drawings that had been prepared for the various structures. It is the most complete mass of information that I have ever seen collected by anybody for any project.

The soil has been carefully examined by experts; the entire area has been cruised by experts; all sections or portions of land on which there was rock which would have to be removed in order to make it suitable for cultivation was excluded in determining the area that should be put under cultivation. Portions of those lands are indicated on that right-hand map by the yellow color. A number of acres of land with the stone removed would become just as valuable land for farming purposes as that colored in blue or green.

They have excluded from the area which will be irrigated all portions of the territory for which pumping is required, and they have based their project on the gravity system of irrigating the lands, deriving the water from the Pend Oreille and Flathead Lake by storage. They have figured out the size of the canal, lined them all with concrete throughout, so that the structure as far as the canals are concerned is permanent.

They have crossed the river where necessary by siphons, and they have figured out the level that will be required for that purpose.

They have designed the structures where some conduits will carry across the Spokane River.

The only part of the project from an engineering standpoint that is lacking is complete data as to the character of the territory through which some of the tunnels are to be put in crossing the mountain ranges.

We checked up their costs, we checked up their rainfalls; we checked up everything, all the data that the State had, and we came to the conclusion, on account of the

character of soil and the climate and in comparison with the Yakima and the Wenatchee that it was a worthy project for completion.

The project is so big that the State could not finance it; private bankers would not undertake it, and I place it in the same class with the Panama Canal and the Alaska Railroad. In each of those cases the Government, after investigation, determined that it was a project worthy for the Government to undertake, and authorized its construction.

Those are, in general, my remarks on the subject, though I am ready to be examined as to the details if you desire to do so.

Mr. HAYDEN. As to the storage in Flathead and Pend Oreille Lakes, will there be any interference with local interests by raising the level of the lakes, and will there be objection to that in other places?

General GOETHALS. There has been no objection raised here, and the estimate contemplates the purchase of all lands that will be overflowed by the raising of the lakes.

Mr. HAYDEN. The diversion is of what character? That is, is it a dam?

General GOETHALS. It is a dam; yes.

Mr. HAYDEN. Is the dam very high?

General GOETHALS. I do not remember the height of the dam. It is a natural dam there, a canyon.

Mr. GOODNER. It will raise the average water 14 feet.

Mr. HAYDEN. A comparatively simple structure then?

Mr. GOETHALS. Yes; the foundation is good.

Mr. HAYDEN. What is the size of the main canal?

General GOETHALS. I do not remember that. That is all given in the data. I have not checked up on that.

Mr. HAYDEN. There would be a large main canal, which would practically be a river?

General GOETHALS. It would practically be a river; yes.

Mr. HAYDEN. Does the main canal pass through a very rough country?

General GOETHALS. Yes; you have got to tunnel and you have got to build siphons in order to get to the land.

Mr. HAYDEN. Those are inverted siphons?

General GOETHALS. Inverted siphons; yes.

Mr. HAYDEN. I imagine then that the construction of the main canal from Newport to the land to be irrigated would be one of the very large items of cost?

General GOETHALS. Yes; now we considered the question of a partial development. The State had discussed that, but if a project of this kind is warranted at all, it is warranted to the full extent. The ultimate cost will be less, and while some of the tunnels—while one tunnel might be constructed and the other could be made later on, we advocated the construction of the entire project, and the money should be made available for that purpose so that the work could be economically carried forward. You get very little results until after you have brought the water to your area here [indicating].

Mr. HAYDEN. Now the success of the Wenatchee and the Yakima projects primarily has been by reason of the great apple-growing industry. You could not expect to grow apples on 1,750,000 acres of land.

General GOETHALS. No; diversified farming is what you want on 1,750,000 acres of land, and what you want on the Wenatchee and Yakima is diversified farming for the success of the farmers.

Mr. HAYDEN. Is the growing season between frosts longer on the proposed project?

General GOETHALS. It is longer on the Columbia River Basin than it is at Yakima or Wenatchee.

Mr. HAYDEN. I visited the Flathead Indian project in Montana two years ago, and being familiar with irrigation in the Southwest I noticed that the land was as fine, that the structures were permanent, and it was apparently an excellent irrigation system, but it seemed to me that since the growing season was so short it affected the feasibility of the project.

General GOETHALS. But that would not affect this at all.

Mr. HAYDEN. Because of the lower elevation?

General GOETHALS. Because of the lower elevation; yes.

Mr. SINNOTT. I see the M. and O. charges are given here—operation and maintenance—at 48 cents per acre per annum.

General GOETHALS. Yes; that is the gravity project. We examined into the pumping project also, and as between the two we favored the gravity project.

Mr. SINNOTT. Well, that is very cheap, is it not, in comparison with most of the Government reclamation projects?

General GOETHALS. Yes; you have got your concrete lined canals, very heavily reinforced concrete canals—too heavy, I think—I accepted their concrete dimensions; you have got steel structures for your inverts; you have got everything of a permanent character.

Mr. SINNOTT. Do you know the general average of the Government project for operation and maintenance?

General GOETHALS. I do not know of any Government project that has been constructed which has been constructed on the basis on which this is planned.

Mr. SINNOTT. What is your general average, Mr. Beadle; much higher than that, is it not?

Mr. BEADLE. It is between \$1 and \$2, I suppose, per acre of irrigable land.

The CHAIRMAN. Under gravity, but when it comes to pumping it runs up sometimes to \$3 an acre.

Mr. SINNOTT. Does this include the pumping, 48 cents per acre, or just gravity?

General GOETHALS. No; there is no pumping in that. That is all gravity.

Mr. HAYDEN. On the Salt River project in Arizona we have profited very materially by the fact that there has been a surplus of power for sale which created a revenue for the project which has materially reduced the assessments necessary to levy on the water users. Is there any possibility of developing power in connection with this project which would aid in paying off the cost of its construction?

General GOETHALS. Yes, in the gravity project, but not to such an extent in the pumping project. The pumping project, which contemplates the construction of a dam across the Columbia River just at the Grand Coulee, and then pumping the water into the lake here [indicating on map], would give a large excess of power which they contemplate would reduce the cost ultimately to the farmers, but that requires a pumping plant which is novel and new, the cost of maintenance and operation will be greater and the chances of breakdowns greater and make the whole thing more complex. I favored the other, both as to the number of acres that could be irrigated and the cost of operation and maintenance.

Mr. SINNOTT. How many second-feet will it require to irrigate this project, both by gravity and by pumping?

General GOETHALS. How much is it, Mr. Goodner?

Mr. GOODNER. The diversion at the maximum season is 20,000 cubic feet per second. That covers 1,750,000 acres.

Mr. SINNOTT. And the other, the pumping?

Mr. GOODNER. With the 300,000 which can be pumped upon you will build that up by about 5,000 second-feet more.

Mr. SINNOTT. That will be about 25,000 second-feet all told.

Mr. GOODNER. Provided there is no development of secondary storage. That is something I should like to take up in detail when my turn comes.

The CHAIRMAN. You have paid more attention to the engineering feasibility, I assume, General, than you have to the economic feasibility?

General GOETHALS. Yes, sir; I satisfied myself that it was warranted at the cost per acre—\$145—provided the land could be secured at \$5 to \$15 an acre, which they assured me was a fact.

Mr. WILLIAMSON. This \$145 per acre does not include the first cost of the land?

General GOETHALS. No; that will be from \$5 to \$15 per acre.

Mr. BARBOUR. Does it include the removing of the stones from that portion you mentioned a short time ago?

General GOETHALS. No; that is entirely excluded from consideration in this project. All that land which would require removal of stone is excluded from the 1,750,000 acres.

Mr. SINNOTT. What are the stones, gravel or lava flow?

General GOETHALS. There is some lava, some boulders, and some gravel.

Mr. HAYDEN. I notice, General, that the bill provides that the report shall be made not later than the 1st of January, 1924. This bill was originally introduced in the Senate perhaps a year ago. Do you think that all the information required to be assembled could be properly gathered together and submitted to Congress in so brief a time as one year?

General GOETHALS. Yes; because of the data they have got already available in the States.

Mr. HAYDEN. There will be no extended investigation in the field which would take considerable time?

General GOETHALS. No. The questions that the Assistant Secretary of the Interior brought up are the questions that will have to be determined, the question of the use of the Pend Oreille and Flathead Lakes and the water supply, which I did not touch upon but I assume that there will be no trouble about that.

Mr. SINNOTT. What is the general average of the private holdings, the area?

General GOETHALS. That I do not know. I can not tell you that.

Mr. SUMMERS. General, I wish you would go a little more into detail as to the feasibility or otherwise of the proposed dam and pumping project.

General GOETHALS. The dam project across the Columbia River necessitates the construction of a dam high enough to give adequate water over the entire area. That dam there [indicating].

Mr. RAKER. What point is that?

General GOETHALS. That is just below the Coulee, on the Columbia River.

Mr. SUMMERS. That is at the head of what is called Grand Coulee.

General GOETHALS. The water there is pumped into a lake that will be created by the Grand Coulee, and from there it will flow by gravity over a portion of this area.

Mr. SINNOTT. How high is the lift there?

General GOETHALS. It is six hundred and some-odd feet. By additional pumping they can get an additional area of land under water.

Mr. RAKER. How far is that from Wilber? Is that north of Wilber—Grand Coulee?

Mr. GOODNER. It is 20 miles due north of Wilber.

Mr. RAKER. I see it here on the map.

Mr. HAYDEN. Would it be possible to build a dam high enough in the Columbia River to back the water up and avoid a large amount of pumping?

General GOETHALS. Yes.

Mr. HAYDEN. How high would the dam be in the Columbia River to generate power for pumping?

General GOETHALS. Dam No. 3 provides an effective head of 211 feet. No dam greater than this has been considered, as it would back water above Kettle Falls, besides causing more extensive overflow. Kettle Falls is already under Government ownership.

Mr. WILLIAMSON. Would silt be a problem in any part of this proposed project?

General GOETHALS. In the pumping project?

Mr. WILLIAMSON. Either in the pumping project or in the gravity project.

General GOETHALS. In the gravity project there would not be so much silt; no. I do not think that is an obstacle there. I do not think that it would count much in the Columbia River pumping project, either.

Mr. SUMMERS. General, before they take your attention to something else I still wish you would go a little more into detail in regard to the dam and the pumping projects.

General GOETHALS. I am looking for that now.

Mr. RAKER. Now, this dam is north of Wilber on the Columbia River, is it?

General GOETHALS. Yes; on the Columbia River. It dams the Columbia River, and there are three propositions. Here are Kettle Falls [indicating]. Dam No. 1 provides an effective head of 123 feet and contemplates the use of hydroelectric units. This dam, without other storage delivered at the dam from above in amounts that can be accurately calculated and depended upon, would give a shortage of power, even for pumping purposes, for 10 of the months of the 9-year record of river flow available for our study, so that is knocked out.

Dam No. 2 means an additional height of dam, providing an effective head of 175 feet, which is the minimum head capable of operating the direct connected two-stage pumping units contemplated over the irrigation season.

Dam No. 3 provides an effective head of 211 feet, which comprises a hydroelectric installation. No dam of greater height has been considered, as such would back water above the lower pool at Kettle Falls, aside from causing more extensive overflow damages.

The dams discussed lie within feasible limits of consideration. Dams of less than 211 feet effective head would scale in cost within the limits set up for the three types under comment. The comparison furnished by these three is therefore regarded as sufficiently comprehensive for present purposes.

Mr. SINNOTT. General, you spoke of a lift of 400 feet. Where is that?

General GOETHALS. The pumping plant for the 211-foot dam is unprecedented, consisting of 17 units, each with a capacity of 1,000 second-feet, against a head of 407 feet.

Mr. SINNOTT. Do you consider it economically feasible to lift water that high?

General GOETHALS. Well, they have got plans for it. It is an untried proposition.

Mr. SINNOTT. Just in that connection, I happened to investigate the matter and I saw a letter from Cramp & Son saying that they could furnish pumps to lift water over 600 feet, and they claimed it was economically feasible to do that.

General GOETHALS. Furnishing how much water?

Mr. SINNOTT. Oh, enough water to irrigate 83,000 acres.

General GOETHALS. These pumps are specially designed for this purpose by the Allis-Chalmers Co.

Mr. HAYDEN. Does that mean that there are a series of pumps to boost the water, one after the other, or do they expect to do the pumping all in one operation?

General GOETHALS. All in one operation. In order to get the necessary amount of water it will require 176 of these pumps.

Mr. HAYDEN. Is it estimated that the life of such large pumps would be long—that is, would the depreciation be about the same as on an ordinary pump?

General GOETHALS. I do not know. The pumps would have to be built for the purpose. Assuming that they worked satisfactorily from the start, they would probably last the same length of time as any other pump.

Mr. SINNOTT. Would these pumps be operated by electricity or the water power itself?

General GOETHALS. By electricity generated by the water power.

This pumping plant would irrigate 1,403,000 acres of land of this project; then by a second series of pumps, lifting the water 200 additional feet, they would get an additional acreage of 454,000, or a total of 1,857,000 acres, but unfortunately the additional acreage is not classified by the former chief engineer of the State commission as irrigable lands.

Mr. RAKER. I do not quite get this. There is how much land now to be irrigated by gravity, General?

General GOETHALS. One million seven hundred and fifty-three thousand acres.

Mr. RAKER. That is marked on the plat. Now, how much by pumping?

General GOETHALS. Additional under the gravity project or the pumping project?

Mr. RAKER. Pumping.

General GOETHALS. The pumping project direct, 1,403,000 acres.

Mr. RAKER. And with the addition that you speak of, another 400,000 acres?

General GOETHALS. But not all irrigable lands?

Mr. RAKER. So it would be about one million four hundred thousand and some odd acres.

General GOETHALS. Comparable with 1,700,000 of the gravity project.

Mr. RAKER. Where is that land located that is to be irrigated by gravity?

General GOETHALS. There it is [indicating on map]; all of that area in there included—some of the land in yellow which was excluded because of work which will have to be done on the land before it could be cultivated.

Mr. RAKER. The reason I ask you that question was, I was using a small map here that was issued by the Columbia Basin project and I did not see all that.

Mr. HAYDEN. Is it your judgment that it would be better to undertake the gravity development from Newport rather than this proposed pumping scheme at Grand Coulee?

General GOETHALS. Yes.

Mr. HAYDEN. Your recommendation is to that effect?

General GOETHALS. Yes, sir. Of course there is opposition to that, so now the commission ought to settle that question.

Mr. SINNOTT. Opposition to what?

General GOETHALS. To gravity in favor of the pumping plan.

Mr. HAYDEN. What is the reason for the opposition, if practically the same area is to be irrigated?

General GOETHALS. It is not the same area to be covered. Of course you frequently have advocates for different methods of doing the same thing, and they become very strongly in favor of their respective plans.

Mr. BARBOUR. Has an estimate been made of the cost per acre of irrigating by pumping?

General GOETHALS. Yes, we made an estimate of it—\$159, Dam No. 1, which does not give you enough; \$163 for No. 2, as comparable with \$145 an acre.

Mr. SINNOTT. The smaller figure is gravity?

General GOETHALS. No, the smaller figure, \$159, is Dam No. 1.

Mr. HAYDEN. But the maintenance and operation costs thereafter for pumping would be greater?

General GOETHALS. Yes.

Mr. SUMMERS. I beg pardon, \$144.99, which is the smallest of all, General, is the gravity.

General GOETHALS. The gravity, yes; without any pumping.

Mr. RAKER. That includes the canal, dams, and structures?

General GOETHALS. That includes all structures down to the falls.

Mr. RAKER. Commencing from Albany Falls down to Hillcrest and the distribution to the farms?

General GOETHALS. Yes.

Mr. SUMMERS. Does it include storage at Flathead and Pend Oreille also?

General GOETHALS. Yes.

Mr. RAKER. Now I understand from your statement that from Albany Falls dam, from the Pend Oreille River on down past Spokane on to the territory described, the survey as to the storage, dams, tunnels, and clear on down to the tract to be irrigated, has been sufficiently surveyed and estimated to find its cost and whether it is feasible?

General GOETHALS. Yes.

Mr. RAKER. And the thing necessary—well, the same is true with reference to the 1, 2, and 3 dams—No. 1, No. 2, and No. 3 on the Columbia River, relative to pumping?

General GOETHALS. They have made investigation borings there. If I were to undertake a pumping project I would make some additional borings there.

Mr. RAKER. To see whether the dams would stand?

General GOETHALS. Yes.

Mr. RAKER. But what is required now, as I understand from your analysis of the data furnished you, General, is of the lakes, the Pend Oreille Lake and the Flathead Lake over in Montana and Idaho.

General GOETHALS. That water-diversion question has got to be settled. I did not touch that at all.

Mr. RAKER. That will be as to the amount of water?

General GOETHALS. No; the amount of water is available. The right of Washington to withdraw from Idaho and Montana water to go into those two States—that question I have not touched upon.

Mr. SINNOTT. That has already been settled by decision of the Supreme Court between Kansas and Colorado and Wyoming.

Mr. RAKER. How is that?

Mr. SINNOTT. That has already been settled by a recent decision of the Supreme Court in a case between Wyoming, Kansas, and Colorado.

Mr. RAKER. That Washington if it is ahead can appropriate water?

Mr. SINNOTT. They say in an appropriation in States the same rule will hold regardless of State lines; the man that makes the appropriation gets the beneficial use and has the same rights regardless of State lines as he would have in the State permitting the appropriation.

Mr. RAKER. Now, that being the premise to start from, did you in your investigation make any analysis to see whether or not the State of Washington has any pretended claims or alleged claims to the waters of Idaho or Montana?

General GOETHALS. I did not. I assumed that the State of Washington would be able to draw the water from Pend Oreille and Flathead Lakes, on the assurance of statements made. I did not go into that question at all.

Mr. RAKER. And, of course, from the prior statement, it would be necessary to follow that you would be unable to say how much of this water would be required to be drawn off for the two eastern States?

General GOETHALS. That is right.

Mr. RAKER. Now, about how much electric energy is developed by these projects?

General GOETHALS. I did not go into that at all.

Mr. RAKER. Did they not have that data? Now I think there are seven tunnels there?

General GOETHALS. There are seven tunnels.

Mr. RAKER. Coming from Albany Falls down to the Hillcrest end of the supply?

General GOETHALS. Yes. I did not go into the power question.

Mr. RAKER. Could you give off-hand—

General GOETHALS (interposing). Mr. Goodner, I think, can give you something on that.

Mr. RAKER. Just a question on that. Could you give off-hand the approximate fall from Albany Falls down to Hillcrest?

Mr. GOODNER. Two hundred and sixty-five feet.

Mr. RAKER. That would be almost a continuous supply of water, would it not?

General GOETHALS. Yes; that is a continuous supply of water, but you are going to make canals only large enough to carry water for irrigation purposes; at certain seasons of the year perhaps nearly all of it will be used for irrigation.

Mr. SINNOTT. How long is this canal to the project from Newport?

Mr. ADAMS. One hundred and thirty miles.

Mr. SINNOTT. Now, this 20,000 second-feet that is needed to irrigate by gravity, you mean that is 20,000 second-feet at the project or at the intake at the dam?

General GOETHALS. At the intake.

Mr. SINNOTT. Do you make any allowance for evaporation?

General GOETHALS. Yes; but it is a very small amount for seepage, because it is all concrete. Even the tunnels are lined with concrete.

Mr. SUMMERS. And it flows very rapidly.

General GOETHALS. It flows rapidly.

Mr. HAYDEN. Is there any limit to the lift by pumping that water can be raised for irrigation purposes, assuming that you have very cheap power?

General GOETHALS. Theoretically not; practically yes.

Mr. HAYDEN. What are the practical difficulties?

General GOETHALS. Mechanical difficulties in the pumps themselves.

Mr. HAYDEN. In other words, the pump would wear out so fast that it would not pay to install it?

General GOETHALS. Yes—well, it is the quantity of water you have got to raise and the mechanical difficulties that come in, due to the construction of the pumps.

Mr. RAKER. Everybody else knows—but, General, what is given to you from the State of Washington report as to the head of navigation up the Columbia on to the Snake River that goes through this territory? Was that considered?

General GOETHALS. I did not consider that.

Mr. RAKER. You did not go into the question of navigation?

General GOETHALS. No; I did not go into the question of navigation of the Columbia. I looked into the question of the effect on navigation by the construction of this dam under the treaty rights with Great Britain and concluded that the dam if constructed there would have to have a lock in it unless the existing treaty were modified.

Mr. RAKER. For what purpose, for the fish to go up?

General GOETHALS. No, for the protection of navigation of the river. Under the provisions of the treaty between the United States and Great Britain no obstructions to navigation of that river may be permitted.

Mr. RAKER. Then what is the highest point of navigation on the Columbia River? Does it go up into Canada?

General GOETHALS. It can be made navigable to Canada by a series of locks and dams over the falls, just as they do through the Cascades.

Mr. SUMMERS. If I may interrupt, just above Pasco is where we have the open river usually at this time, and we have some rapids that interfere here.

Mr. RAKER. Under the treaty between Canada, or the British Government, and the United States, these dams, 1, 2, and 3, that have been spoken of, could not be put in permanently?

General GOETHALS. Well, you would have to provide for navigation. The treaty between the United States and Great Britain requires the Columbia River, between the international boundary and the ocean, to be kept open for navigation. That is a treaty provision.

Mr. SINNOTT. As a matter of fact the British do not navigate down there.

General GOETHALS. No, but they maintain that must be an open river for navigation purposes, and the time is coming when that will be the case.

Mr. RAKER. Of course we can not just take this treaty and throw it away like a scrap of paper.

General GOETHALS. No, you can not do that. Great Britain would not let us do it. I doubt very much if Great Britain will allow us to build that dam without some provision for navigation.

Mr. RAKER. That is the reason I was asking.

General GOETHALS. I doubt if Great Britain will consider the abrogation of that treaty, because it gives her some rights which in the future may be very vital to her.

Mr. RAKER. So, as a matter of fact, the pumping plan is almost eliminated?

General GOETHALS. No, the pumping plan is not eliminated if you provide a lock in there to accommodate navigation.

Mr. SUMMERS. How much would that add to the expense?

General GOETHALS. That I do not know.

Mr. RAKER. Would that just mean the navigation of craft without any other utilization of the river as it relates to fish going up?

General GOETHALS. Oh, it is outside of the fish going up. Navigation of the river means boats going up and down the river.

Mr. RAKER. It does not include also the right of the fish to come up?

General GOETHALS. No, I guess not. The fish do go up. You can put fish ladders on your dam and the fish will go up.

Mr. RAKER. But can you build them that high?

General GOETHALS. You might try it.

Mr. RAKER. But that is very important. We have that question involved now, General. What is your judgment as to that? It is vitally important. Matters involved like that and others must be considered. How high can you build fish ladders?

General GOETHALS. That I do not know.

Mr. RAKER. Your engineering experience has not gone into that?

General GOETHALS. No, sir.

Mr. RAKER. I thought I would get an opinion from you now in advance.

Mr. SINNOTT. General, Isn't there a project there at Priest Rapids?

General GOETHALS. Yes, there is a project there at Priest Rapids.

Mr. SINNOTT. Does that pink overlap on that?

General GOETHALS. Well, that is where there is some discussion of a project, the Priest Rapids project. It will overlap this.

Mr. SINNOTT. Have they done any work there?

General GOETHALS. No.

Mr. SUMMERS. The project contemplated is on the opposite side of the Columbia River.

Mr. SINNOTT. That is the Pierce Project?

Mr. SUMMERS. Yes.

Mr. HUDSPETH. General, do I understand that the dam that will supply the water by gravitation will not be sufficient to irrigate that body of land there in pink?

General GOETHALS. This pink area here [indicating on map]?

Mr. HUDSPETH. Down here [indicating], this entire body. It will not impound sufficient water there to irrigate that land?

General GOETHALS. You can by pumping. You can irrigate all of this down here [indicating]. You see there is the part that will irrigate.

Mr. HUDSPETH. I understand you are building two dams here, one for pumping and one for gravitation?

General GOETHALS. No, there are two projects, two projects for irrigating part of that area. One of them is by damming the Columbia River and then pumping the water to an artificial lake and allowing it to come down by gravity, the other is the construction of a dam with canals, the entire length of which will be gravity.

Mr. HUDSPETH. That would be sufficient to irrigate how much?

General GOETHALS. One million seven hundred thousand acres of land, by gravity plan.

The CHAIRMAN. But the dam would only be constructed in the event you wish to irrigate additional land?

General GOETHALS. No, you do not get it yet. That is the land in pink on the large map. There are two projects; one is a gravity project and the other is a pumping project. The gravity project contemplates the construction of a dam for storing water in Pend Oreille and another dam for storing water in Flathead Lake. They are low dams. The water then comes down through these canals by gravity. There is no pumping in either of these.

The CHAIRMAN. No, but this gravity system water is 1,753,000 acres?

General GOETHALS. By the gravity system, yes. Now that is one. The other plan is the construction of a dam across the Columbia River. Your water source is then the Columbia River and you must pump that water to an artificial lake from which the water will by gravity come over a certain portion of this area, 1,400,000 acres.

Mr. HUDSPETH. Then, under the dam that you speak of over on the right there you would have no complications with the British Government, would you?

General GOETHALS. None at all, and you have no difficulties with pumps.

Mr. SINNOTT. You will not have both the pumping and the gravity systems? Is that correct—at the same time?

General GOETHALS. If you take your water supply from the Pend Oreille with the storage that may be required from the Flathead, you get no pumping whatsoever for the 1,700,000 acres.

Mr. SINNOTT. But by putting in the dam there you have to pump?

General GOETHALS. By putting the dam there you have got to pump all the water required for irrigating 1,400,000 acres from the Columbia River. Is that clear, now?

Mr. SINNOTT. Yes.

The CHAIRMAN. General, your estimates of cost per acre of \$145 was based on the gravity system alone—that is, the two lakes?

General GOETHALS. The two lakes, yes; the construction of a dam here [indicating] to raise that for storage purposes.

The CHAIRMAN. And if you wish to bring in 400,000 additional acres represented by the land there, you would have to build storage?

General GOETHALS. To put in the pink you have got secondary storage from which you pump to the additional acreage. That is right.

The CHAIRMAN. Yes, but which would be supplied from this dam you propose to build?

General GOETHALS. No; still supplied by this water.

Mr. HAYDEN. It is no alternative proposition.

General GOETHALS. No alternative proposition.

The CHAIRMAN. Oh, yes, I see.

Mr. BARBOUR. And you would not in any event have to have them both to cover all of this pink land, or practically all?

General GOETHALS. No; you would not have to have them both; you would have one or the other.

Mr. BARBOUR. But the one will irrigate about 300,000 acres less than the other.

General GOETHALS. Yes, sir; by gravity alone.

Mr. SINNOTT. Are these vertical lines intended to cover this area. I see they run out there.

Mr. GOODNER. That is the fault of the blueprinting. That is faulty blueprinting.

Mr. SINNOTT. But that entire pink area is intended to be in the vertical lines?

Mr. GOODNER. Yes.

Mr. RAKER. In other words, the gravity system and the pumping systems are two separate independent methods.

General GOETHALS. Of accomplishing the same result.

Mr. RAKER. Irrigating the same class of land.

General GOETHALS. But it does not, you see.

Mr. RAKER. Practically the same.

General GOETHALS. Practically the same tract of land.

Mr. HUDSPETH. And one costs \$145 per acre and the other \$159?

General GOETHALS. \$163.

Mr. RAKER. Now on the gravity system I see on the map before me and the one there, we still pump into Canada relative to the water on the Flathead and the Pend Oreille.

General GOETHALS. You have got your Pend Oreille going into Canada there. That is where you pump into Canada, yes, but you do not deprive them of any water.

Mr. RAKER. That is the reason I wanted to ask that question. It would not affect the natural ordinary flow of the water in any way so as to affect the Canadian rights to the water in the Pend Oreille River, which is one of the main branches of the Columbia?

General GOETHALS. That is right, one of the main branches of the Columbia River.

Mr. SINNOTT. And by the gravity system you irrigate 1,753,000 acres?

General GOETHALS. Without pumping.

Mr. SINNOTT. Without pumping, but by putting in secondary pumps you irrigate how many acres?

General GOETHALS. Four hundred thousand additional acres.

Mr. SINNOTT. And that will irrigate 2,100,000-odd acres?

General GOETHALS. Yes. Then you can get an additional amount if you will clear some of that land of the stones and so on. That is entirely excluded from our figures.

Mr. SUMMERS. Just by way of summing up, although the general has covered this, I would like to ask this question: All things considered, treaty rights, water flow, engineering difficulties, and all of those problems, which of the two, including the amount of land to be irrigated and the cost—which of the two projects appeals to you as the more feasible?

General GOETHALS. The gravity project, and I so recommended to the State.

Mr. RAKER. Now, did you go into the climatic and soil conditions any at all, General?

General GOETHALS. Yes; as exhibited by their records.

Mr. SUMMERS. From the amount of land to be irrigated, taking the gravity system without any pumping, is it your judgment, from the thorough investigation that you have made, that the project is feasible?

General GOETHALS. It is.

Mr. SUMMERS. It would justify the expenditure?

General GOETHALS. Yes, sir. I am an enthusiast. You must take that into consideration when you consider my attitude. I went out there doubting; I came back a strong convert.

Mr. SUMMERS. Now, you took into consideration the fact that this money, in addition to the original price and cost of the land, would be added to the land and that

these people who obtained the water would pay back to the Government the money invested?

General GOETHALS. Yes, sir.

Mr. SUMMERS. Did you figure on any reasonable rate of interest that should be charged up in the construction of the project?

General GOETHALS. I did not.

Mr. SUMMERS. What would be your judgment on that?

General GOETHALS. I thought the Government ought to bear the interest on account of the return that the Government would get in other ways from it. I regarded it after I went over it as a national project. The Government would get its returns through taxation, not only in that section of the country, but all over the United States, and I felt that the Government ought to absorb the interest on the investment.

Mr. SUMMERS. Now, in addition to your answer to the question that I have just propounded, there is an additional value that would come to that locality and to the Government generally by way of development of electric energy, is there not?

General GOETHALS. Yes; very much.

Mr. SUMMERS. That you are not able to say?

General GOETHALS. No; I am not able to say anything about that.

Mr. SUMMERS. Are any of these people here in a position to say that?

General GOETHALS. I think Mr. Goodner will be able to answer that.

Mr. SINNOTT. Where will these secondary pumping projects be? You can develop water power at those points?

General GOETHALS. Yes; you can develop water power at those points for that purpose.

Mr. SINNOTT. What is the market value of the land there at White Bluffs?

General GOETHALS. I can not give you that. The State assured me that all that land could be acquired at from \$5 to \$15 an acre.

Mr. SINNOTT. I mean land under irrigation now.

General GOETHALS. Oh, I do not know.

Mr. GOODNER. Under the State soldier settlement act it is from \$300 to \$500 an acre with the improvements that the State is putting on the land.

Mr. SINNOTT. \$300 to \$500 an acre?

Mr. GOODNER. Yes, sir.

Mr. SINNOTT. Land that is in orchard?

Mr. GOODNER. No, sir; that is first-class farming land.

Mr. SUMMERS. Including what improvements?

Mr. GOODNER. We put on a four-room house, barn, the usual outbuildings, and a well and electric pump adequate for irrigating 20 acres.

The CHAIRMAN. And what rate of interest?

Mr. GOODNER. Four per cent.

Mr. HAYDEN. How long do the payments extend?

Mr. GOODNER. Twenty years.

Mr. RAKER. This is State settlement for the soldiers?

Mr. GOODNER. Yes, sir.

The CHAIRMAN. General, it is not contemplated that it would be necessary to buy any land excepting for the right of way and damages around the lake? You do not contemplate buying any land within the project?

General GOETHALS. I was thinking of settlement. I had in mind the question of settlement, whether the project would pay on the basis of the farmer that buys land from \$5 to \$15 an acre.

The CHAIRMAN. Those already owning land there of course would have water and pay for it. The Government would not have to buy any land?

General GOETHALS. Oh, no.

Mr. HAYDEN. A gross charge of \$200 an acre spread over 20 years would be \$10 per acre a year.

General GOETHALS. Yes.

Mr. HAYDEN. Do you think the land would stand a charge of \$10 an acre a year?

General GOETHALS. Yes.

Mr. HAYDEN. Of course if interest has to be charged and the payments amortized say, over 40 years, the annual payment would still be but \$10 an acre.

General GOETHALS. I have asked Mr. Goodner to get data on that feature of it. He will be better prepared to answer than I.

Mr. RAKER. Does your investigation present this fact, gentlemen, that these people or that that territory as represented by the people that now own it, that it is practically all privately owned land except about 5 per cent—I call railroads privately owned land—that it will be subject to taxation for the purpose of paying this cost back to the Government?

General GOETHALS. I think it should.

Mr. RAKER. It should, but what arrangement has been made? What is there to determine now that this land will be, that these people will be obligated to pay this money back to the Government for construction of this project?

General GOETHALS. I can not answer that question.

Mr. SINNOTT. You mean will they be willing to go into a project or irrigation district?

General GOETHALS. Oh, they can not. They have got no money. Nobody would finance it.

Mr. SINNOTT. I mean they would if they had the promise of the Government.

General GOETHALS. Oh, they would if they could.

Mr. RAKER. In other words, what assurance is there now up to the present time to the Government that this territory will be subject to the lien of the Government for the money expended?

Mr. SINNOTT. They would be willing to organize themselves into an irrigation district?

General GOETHALS. Mr. Goodner can answer that.

Mr. RAKER. I assumed that, Mr. Sinnott, but I wondered whether or not that had been done and was part of the general investigation.

General GOETHALS. No; I was investigating the feasibility of the project from an engineering standpoint.

Mr. RAKER. I was going a little further, as to the practicability so far as the Government is concerned with assurance of full repayment.

General GOETHALS. Mr. Goodner will take that up.

Mr. SUMMERS. It has not been reached yet, Mr. Raker.

Mr. SINNOTT. What would be the water duty on this land, General?

General GOETHALS. Do you remember that, Mr. Goodner?

Mr. GOODNER. Thirty-three inches net delivered.

Mr. SINNOTT. Per acre?

Mr. GOODNER. Yes. It varies from 24 inches on part of the land to as high as 5 feet on some of it. Every section is classified as to its actual net requirements, and the average on the total is 33 inches delivered.

Mr. SINNOTT. How much is that in acre-feet?

Mr. GOODNER. That is $2\frac{1}{2}$ acre-feet.

The CHAIRMAN. That is rather excessive, is it not?

Mr. GOODNER. Better too much than too little.

Mr. RAKER. Find out while you are on that, Mr. Sinnott, as to what arrangements the general made in his investigation as to drainage.

General GOETHALS. We looked into that. There is a natural drainage all through that country.

Mr. RAKER. And that would not be a large expenditure?

General GOETHALS. No.

Mr. SINNOTT. They did not anticipate originally the necessity of drainage. They used to think the settlers could do that.

Mr. RAKER. That is the reason why I have asked the general if he figured that in this instance.

General GOETHALS. There is a map in the original report showing that drainage. You see all of this land was originally drained by nature. That is the formation of the land. It was at one time entirely submerged, so it naturally drained itself and it left the drainage canal still there for us.

Mr. SINNOTT. Grand Coulee is supposed to have been the old Columbia River bed?

General GOETHALS. That is one of the traditions.

Mr. HAYDEN. Is the land under the project generally rolling?

General GOETHALS. Yes; it is rolling.

Mr. HAYDEN. It is not level like our deserts in the Southwest?

General GOETHALS. No.

Mr. SINNOTT. Is that a sandy soil like the Kennewick country?

General GOETHALS. It is like the Yakima and Wenatchee.

The CHAIRMAN. If there are no other questions, we will excuse the general. We appreciate your coming here, General, and giving us the information that you have.

Mr. WEBSTER. Mr. Chairman, General Goethals made quite a comprehensive report of his studies on this project to the department of conservation and development of the State of Washington, and I should like to ask to have that report made a part of the hearings, not for printing unless the committee desires it, but for such use as the committee and members generally may care to make of it.

The CHAIRMAN. If there is no objection, the reports of General Goethals will be incorporated in the hearing.

Shall we adjourn now until 10 o'clock to-morrow morning? Do you think we can finish to-morrow?

Mr. WEBSTER. I believe we can if we could meet at 10 o'clock.

Mr. SINNOTT. Why not go on now for a while?

The CHAIRMAN. Very well. Mr. Goodner will now address the committee.

STATEMENT OF MR. IVAN E. GOODNER, CHIEF ENGINEER, COLUMBIA BASIN SURVEY, STATE OF WASHINGTON.

Mr. GOODNER. Mr. Chairman and gentlemen of the committee, the other gentlemen who have spoken to you are known to you, but I will have to introduce myself. My name is Ivan E. Goodner, at the present time chief engineer of two divisions of the Washington State department of conservation and development. In that department we have the Columbia Basin survey, with which I have been associated for four years, and we also have a score or more of irrigation and drainage projects in the State, all of which are in active operation or construction, and all of which come under our direct supervision.

I have been engaged in irrigation or power construction exclusively since 1901, and frankly I do not know much of anything except those two lines.

When the Columbia Basin Commission started its work under the appropriation nearly four years ago it was at that time thought that the project-construction cost would probably run to \$200 an acre. We therefore knew that we must pick out for irrigation only those lands which under any fair plan of financing would stand a cost of \$200 an acre. With that in mind we got Mr. Guy C. Finlay, who was then project manager under the Reclamation Service of the Tieton project, one of the units of the Yakima project, together with F. W. Welch, who was with the United States Reclamation Service on the Big Bend project, and they spent nearly a year in making a detailed classification of every section of the 3,000,000 acres which geographically lie within the project, classifying those lands and rejecting those which would not stand \$200 an acre. We found that 60 per cent of the land would apparently stand such a cost, giving us 1,753,000 acres. That is shown on the second map in the green shading.

Mr. SINNOTT. What do you mean by the green?

Mr. GOODNER. Green or blue, depending upon your eyes.

Mr. SINNOTT. That looks blue to me.

Mr. GOODNER. The remaining 40 per cent was partially too high to be reached by the gravity lines and partially land which would require considerable labor before it would be available for irrigation. The lands which are first class but too high are seen in pink. They can be reached by what we call "secondary pumping," under either the gravity or the primary pumping alternate plans.

Mr. SINNOTT. How high will you have to pump to the pink?

Mr. GOODNER. The maximum lift to reach any of the pink areas is 150 feet.

At the same time that the land was being classified for its agricultural quality a classification was being made by the same people as to the water duty required on the lands. This varied on the higher areas in this end, the north and east portion of the project, which now occasionally gets a successful wheat crop, from about 24 inches net duty, to the area in the extreme southwest and the extreme south, where it is completely desert, and at the present time small pumping projects are using 5 feet of water. We found an average demand, as I stated before, over the entire project, of 33 inches.

Mr. SINNOTT. Is 24 inches 2 acre-feet?

Mr. GOODNER. Yes; 2 acre-feet. It varies from 2 to 5 acre-feet.

Mr. RAKER. I never noticed it before, but just looking now, about half of that land is already irrigated.

Mr. GOODNER. Not on that project.

Mr. SUMMERS. None of this is irrigated.

Mr. RAKER. I was looking over here at this map, existing irrigation areas, State of Washington, and then I look at this map and see the same thing.

Mr. GOODNER. The legend is unfortunately misleading. Here the green represents existing projects; on this one the blue or green represents irrigable by gravity, of the highest class.

Mr. RAKER. I was just casting my eye from one map to the other and I thought that showed the same thing.

Mr. GOODNER. Taking the water total estimated in that way we found that there was a total requirement of nearly 6,000,000 acre-feet. In arriving at that we have allowed for losses aggregating 20 per cent. On a concrete-lined system 20 per cent

loss is excessive. We do not expect really that we will get any such loss as that, but to meet the average loss on other projects and to avoid criticism that we have not been conservative, we have allowed for nearly 20 per cent losses. Those losses were estimated, each kind in particular, the seepage in the different areas, the evaporation in the different areas, the losses in failure to adequately control deliveries, and all those various things which enter in.

Coming then to the two sources of water which could supply such an amount as that we find first the Columbia River, where it can be supplied by pumping to a gross lift of 615 feet. That gross lift would be divided, as General Goethals has said, by 200 feet lift by dam, and pumping 415 feet more; or, as was suggested at one time, the total 615 feet might be made by one dam, if such a thing were feasible. That would result in putting the great smelters and mines up here in Canada, the Canadian Pacific Railroad, and so forth, under two to three hundred feet of water. That is a minor matter, of course, in connection with a dam 615 feet high.

Two hundred and eleven feet head is the highest that we can go without meeting objections, which the State's attorney general had told us would be insuperable.

The other alternative was to get the gravity diversion somewhere from the Pend Oreille River. You are all more or less familiar with the Colorado River. For 20 years past its average flow has been between 16,000,000 and 17,000,000 feet per year; the Pend Oreille River, which in the East at least is rarely heard of, is a good deal bigger stream. Its average flow over the same 20 years has been more than 19,000,000 acre-feet. Of that 19,000,000 acre-feet—

Mr. SINNOTT (interposing). How many second-feet is that?

Mr. GOODNER. That varies from a minimum of 2,500 to a maximum of 140,000 second-feet. Of course the variation is not nearly so great as on the Colorado, but the gross annual flow averages considerably more.

Mr. RAKER. At what point do you figure that?

Mr. GOODNER. That is at our point of diversion at Newport, and the Colorado as reported near Yuma.

Mr. RAKER. So that as it gets down it adds a great deal more to it?

Mr. GOODNER. There is very little water added to the Pend Oreille River.

Another question has been asked, why we get no run-off here [indicating on map]. We can not get any run-off because there is no rain. Even if these streams were high enough so that they could be diverted on this land, they have no flow, clear up here to Republic. As is shown in the State report, we get a rainfall of only 7 to 10 inches.

The CHAIRMAN. Don't you get snow in the wintertime?

Mr. GOODNER. All the rainfall that we get comes in the winter as snow. We get none in the summer.

The CHAIRMAN. No rain at all?

Mr. GOODNER. No; there is no run-off to those streams.

Mr. RAKER. That is, all that northeastern part?

Mr. GOODNER. Yes; the minute you come to the Pend Oreille River, from there eastward throughout the entire watershed, you get up then into the enormous snow-falls, so that from this area, which is 24,000 square miles inside the blue lines, we get an annual run-off of greater than 19,000,000 acre-feet of water. That comes sometimes in tremendous floods; in fact, May and June of every year in the record have shown floods greater than the total storage which we could possibly make in all the lakes of that country.

Mr. RAKER. That has the same effect after it passes the Grand Coulee until it gets clear on down to where it joins the Snake River?

Mr. GOODNER. Yes; but the effect of the Pend Oreille floods is largely masked in the Columbia River, because the Columbia, coming from the north, from British Columbia, has a flow of from eight to ten times larger than the Pend Oreille, so that the Pend Oreille flood happens to come simultaneously with the Canadian run-off, it does not raise the Columbia by itself to a flood stage.

Mr. RAKER. Is it ordinarily the case that they do not meet?

Mr. GOODNER. Ordinarily they do not meet, because the Canadian boundary runs from two to five hundred miles—the Canadian run off—two to five hundred miles farther north, and it comes nearly a month later. These Montana areas you see are way down to the south and the snows melt and go off much earlier than they do in Canada.

Mr. SINNOTT. Your storage reservoirs are going to be on Pend Oreille and Flathead?

Mr. GOODNER. And probably also on Priest Lake.

Mr. SINNOTT. Where will you build your dams, on Pend Oreille and Flathead?

Mr. GOODNER. On Flathead, three-quarters of a mile below Polson.

Mr. SUMMERS. What is the height of the dam?

Mr. GOODNER. We would raise the water about 18 feet under the maximum development, and I would like to take that up more in detail in connection with the discussion of a joint power and irrigation development.

Mr. SINNOTT. How high is the dam at Pend Oreille?

Mr. GOODNER. At Pend Oreille we will raise the average water level 14 feet. Flathead has 120,000 acres of surface at low water, Pend Oreille 80,000, and Priest Lake 30,000. You see, it only takes 10 or 14 feet on those three lakes to run us up to over 3,000,000 acre-feet of storage.

Mr. SINNOTT. For both?

Mr. GOODNER. Yes.

Mr. RAKER. Are there any insurmountable objections to the raising of those lakes, like there are in other lakes in the United States?

Mr. GOODNER. If we raise them to the limits which we contemplate, there are no serious objections; if they are raised to the limit which has been proposed in an application before the Federal Power Commission by some of the power companies, there would be serious objection.

The recommendation of the Columbia River Board of Engineers to the Federal Power Commission strikes a middle ground, going somewhat higher in storage than the State authorities of Washington had contemplated but not going as high as the Montana Power Co. had asked for. They propose a height which would give a regulated flow out of Flathead Lake of 6,000 second-feet or more the year around. If that development is made by the power companies in advance of the Columbia Basin development, the Columbia Basin project will need to spend practically nothing beyond, because the regulation which we desire will have been placed on Flathead Lake by the power companies operating in Montana.

On the other hand, if the irrigation project should develop first, it would only require about 2 feet additional storage on top of our plan to give the regulation which the power companies desire, at comparatively small cost to them.

Mr. RAKER. Would it be interrupting your general outline statement to ask you this question: What arrangements have you made up to the present time regarding securing the right to dam up, appropriate, or divert and appropriate these waters that you speak of down to the lands that you are contemplating irrigating?

Mr. GOODNER. The answer to that falls into two parts. Prior to the recent Supreme Court decision in an interstate case, we had applied to the State of Idaho for a permit to divert, store and divert water required for the State of Washington. Under the Idaho laws they were unable to grant the permit, yet had no grounds upon which they could reject it for this reason: Their laws require development to follow within two to five years of the granting of the permit. We could not in good faith file an application and state that we contemplated development within two to five years. The application is therefore on file with the Idaho authorities, but neither granted nor rejected. It is the opinion of our attorney general and of the water commissioner of Idaho that that preserves our priority as against any subsequent attempt to obtain the right.

Mr. RAKER. Now as to Montana.

Mr. GOODNER. As to Montana, there is no law in Montana under which we can make a filing for diversion and use of water outside of the State. However, since the Montana Legislature met, the Supreme Court of the United States has made the decision referred to, in which the priority of development governs the use of the water. That is more or less a parallel case to the recent agreement between seven States for the use of the Colorado water.

Mr. SINNOTT. The Wyoming-Colorado decision?

Mr. GOODNER. Yes.

Mr. WEBSTER. Priority of use creates priority of right, regardless of State lines.

Mr. GOODNER. Yes, sir.

Mr. RAKER. I was trying to hold you on to this so you would not get into that agreement between the seven States, because I am going to ask some questions about that when you get to it, but I would like to hold you on to what you have done and the Supreme Court decision of the United States and the laws of the States of Montana and Idaho, and then ask you if it is your view and your intention that to make yourselves safe you have to do this for the land in Washington.

Mr. GOODNER. We have provided for that in another way, and that is the second side of my answer to your question.

We have, in connection with the State engineer of Idaho and the State engineer of Montana, made a preliminary estimate—final estimate will be made out of the funds which this bill would authorize when it gets to the appropriation committee. In our preliminary estimate we have worked out all the lands in this watershed in either

Montana or Idaho which could be irrigated. We have worked out all the power developments which will be possible, and we are providing in our plans to make sufficient storage to take care of all those lands and those power sites, and still have enough left after they have got the prior rights, if they get them, for our use, and that is included in our costs. If we get absolute priority over those people and they have to build subject to our rights, we can at once shave several million dollars off of our costs, but we have figured our water supply, our storage, our regulation, big enough to take care of all these smaller projects, so that there could be no question of our priority or secondary or other rights being adversely affected.

Mr. RAKER. You are figuring on securing a priority of the right to eventually divert water for this land as against subsequent appropriators as well as against subsequent applicants or participants in the development of electric power, are you not?

Mr. GOODNER. I would object, sir, to using the term "priority." We are not asking for priority.

Mr. RAKER. But you are asking the Government's money to go in there, and that is the reason I am asking the question. I do not see where you get the theory that the Government can afford to spend \$200,000,000 for a dam and canals and an irrigating system, where an individual would not dare think of spending any money unless he knew or felt quite satisfied that he has complied with the law relative to the right to appropriate, to divert, and use water.

Mr. GOODNER. I did not quite understand your question there. Certainly we claim to establish absolute right to the water, but on the contingency that we might not be able to get the first right, we have provided in our estimates sufficient money to take care of all the possible prior rights which these other areas might develop.

Mr. SINNOTT. Who made the application in Idaho?

Mr. GOODNER. It was made by the State supervisor of hydraulics, of Washington, as trustee for the State of Washington, for the use and benefit of the Columbia Basin lands. A map was filed showing the entire area.

Mr. SINNOTT. There are no national parks involved around the Flathead or the Pend Oreille or any place else up there?

Mr. GOODNER. No, sir.

Mr. SUMMERS. But this question of priority would all be determined before any appropriation other than this appropriation of \$100,000 for investigation would ever be secured?

Mr. GOODNER. Yes, sir.

Mr. HAYDEN. You have discussed the interest of the State of Montana, which is that they naturally desire to reserve enough water within the State to irrigate all the land that can be irrigated in that State. The same is true of the State of Idaho. In your opinion, is there ample water to supply and take care of all the land in the Pend Oreille drainage area in both of these States?

Mr. GOODNER. Yes, sir. I will answer that in another way. There are 19,000,000 acre-feet available, of which we need 6,000,000. There is a surplus there of 13,000,000 acre-feet, enough for twice the size of the Columbia Basin area, and there are only about 150,000 or 200,000 acres in all this area that could be watered, even by pumping. In other words, their total demand as against our demand for 33 inches amounts to between 2 and 3 inches additional storage on the Flathead Lake or lakes higher up.

The CHAIRMAN. Your contention is that there is sufficient water storage there in the Flathead Lake to take care of the Montana interests and also to contribute toward the irrigation of the Columbia River basin?

Mr. GOODNER. Yes; not merely in Flathead Lake but in the smaller lakes. These areas north of the Flathead could not be irrigated from that lake.

The CHAIRMAN. But if the people in Montana contemplate irrigating lands, they would not have their rights prejudiced, or the use of the water prejudiced by your not making the dam sufficiently large to supply them and yourselves?

Mr. GOODNER. Their right would not be prejudiced at all. In fact, it is our hope that out of this \$100,000 appropriation for Federal investigation they will investigate the storage in this chain of lakes sufficiently to allay any popular feeling that those lands and the irrigation of them might be interfered with by the basin project.

Mr. SINNOTT. Is there any activity up there toward irrigation from Flathead Lake?

Mr. GOODNER. None particularly, outside of the Federal claim, and they have adopted a different plan for irrigating the Flathead project. They are using small storages in this area instead of attempting to develop the Newell tunnel. They, however, still hold the right, as I understand it, at the Newell tunnel.

The CHAIRMAN. Did the Senators from Montana either before the Senate committee or on the floor of the Senate indicate any particular objection to this project?

Mr. GOODNER. I was not here at that time, and I do not know.

Mr. GOODWIN. I will say that Senator Walsh raised a question as to whether or not the matter of the use of water in Montana had been investigated, and wanted it looked into, so that all rights in Montana would be properly protected, and this bill was amended at Mr. Walsh's instance, so as to cover that proposition and his conception of it.

Mr. HAYDEN. There is a further Federal interest in this stream in that there might be public lands below your project which could be irrigated from its waters. Then there is the question of maintaining the navigability of the Columbia River. Have those features been looked into?

Mr. GOODNER. We crossed over into Oregon on the South side of the Columbia River to see whether or not these areas could be reached by extension of our lines. We found that they can not by any possibility be reached, for this reason: The Columbia River Valley is a great many miles in width and is very low in elevation, and these lands in Oregon are higher; they require an inverted siphon 60 or 70 miles in length and of enormous size to carry any water from the Columbia Basin to those lands, and those lands can be more cheaply served from the projects which have been already investigated and some partially developed in Oregon itself. So that we can not cross the Columbia River into Oregon or reach any lands down downstream on the Columbia at any economic figure whatsoever.

Mr. HAYDEN. What is the situation on the Washington side of the river?

Mr. GOODNER. We ran a line to see how long and how high head the siphon would have to have to reach the land commonly called Horse Heaven Land. There we would have a siphon 40 or 50 miles in length and operating under a head of 300 to 800 feet; that again costing much more than the estimates in existence for watering Horse Heaven from the Mount Adams region.

Mr. RAKER. So that I may get this clearly in the record—and we do not seem to quite get together—all of the estimates as to Idaho and Montana for all the land that could possibly be irrigated in the future, you think could be provided for? Is that the theory?

Mr. GOODNER. It has been provided for in our storage requirements and cost estimates.

Mr. RAKER. It would take care of all the land that might hereafter come in from Montana?

Mr. GOODNER. Yes, sir.

Mr. BAKER. And the same is true of Idaho?

Mr. GOODNER. Yes, sir. These two lakes lie in extremely deep depressions. They are the tail end, you might say, of what were once lakes of enormous size. It is only the areas within the original lake basins that can possibly be irrigated from there. To get the water from the Flathead Lake, for instance, on to the lands in Central Montana, which are lower, would require perhaps a 150 mile tunnel.

Mr. RAKER. That is too long.

Mr. GOODNER. Or pumping over the Bitter Root Range, neither of which engineers consider feasible under modern conditions.

Mr. SUMMERS. I drove over that range this summer and I rule it out.

Mr. GOODNER. Now I might say there that both our State Commission and the Federal Power Board officially requested the proper authorities, the Governors, and the State engineers, of Montana and Idaho, to furnish the Federal Power Commission with maps and detailed data as to every possible use that could be made of the waters of those lakes, and they have done that over their signatures and we have them in the file. They are also in the Federal Power Commission's files now, and it is granted without question that the extreme area and the maximum horsepower which they think the future might develop would be taken care of.

From the Federal standpoint might I say that developing the area in Washington and the power in Washington, and the area here and the power here [indicating Montana] is one project. There is no reason why the Federal Government should take on this one—Washington—and leave these in Montana alone [indicating]. I know the Columbia Basin project estimates cover any water that can be used anywhere for irrigation or power out of that watershed.

Mr. RAKER. Are there power applications on file now for the Flathead and Pend Oreille?

Mr. GOODNER. Yes; on the Flathead. There is one on the lower Pend Oreille also.

Mr. RAKER. And they are held up?

Mr. GOODNER. We had, just before I left Olympia, a communication from the executive secretary of the power commission to the effect that unless we showed further objections within a period of 30 days they would grant certain power applications in Montana upon the basis stated, that basis containing a reservation that 6,000 second-feet should be a minimum regulated flow out of the stream, except

where the stream naturally would flow less than that, which is in the middle of winter when we are not irrigating and not interested, and if they put that development in and regulate the flow to 6,000 second-feet we will forget Flathead so far as irrigating this area is concerned. That will give a regulated flow of 6,000 second-feet on down the stream, so that the surplus between 6,000 and the 20,000—and we only need 20,000 for about six weeks—we then can draw from Pend Oreille.

Mr. RAKER. In other words, to put it in this language, you have taken every effort you can up to the present time under the law, State and Federal—it applies to the State of Washington and also to the other two States where the water heads—to get a prior valid right to the use of that water.

Mr. GOODNER. Yes, sir. There is one more thing we have done which I did not mention. We passed at the last legislature in Washington—and Idaho also passed at our request—a reciprocal act which grants the right to either State, if it has passed the reciprocal act, to come into the other State and take water across the boundary. In other words, Idaho or Washington now have in effect a law granting to either State the same right as an individual to take water and to take it over the State boundary.

Montana has not passed that act.

Mr. HAYDEN. If the Montana Legislature were to pass such an act, then there would be no necessity for an interstate treaty or compact such as has just been negotiated with respect to the Colorado River?

Mr. GOODNER. None at all. Now let me go further. This is not trespassing upon the privileges of Montana either. Montana's big interest lies in developing the power. The regulation of that lake will give nearly a million horsepower between the outlet of Flathead Lake and the Idaho boundary that can be developed in Montana. Their big interest is in power, and sooner or later the power will be developed. Supposing they should block us for 10 years in putting our development in there; we could supply our first 10 years' demand from these lakes Pend Oreille and Priest, and the power development alone there at Flathead would give us the regulation we want, even assuming the most adverse sentiment there.

Mr. RAKER. That is, if the present applicants and those that might come develop all the water that comes from Flathead Lake, that comes into the Pend Oreille, it would only add to the development that would affect your people beneficially.

Mr. GOODNER. Yes, sir; the power company would stand the cost, instead of the land. Not only that, but it is possible for maximum power development to regulate for much more than 6,000 second feet flow. They can regulate the Flathead for a lot more than that if power demands justify it, but if they will only put 6,000 in which the Power Commission is recommending in the present permits, that is all we are asking for. So far as irrigation is concerned, that takes care of us.

Mr. HUDSPETH. When you make the statement that you have made preparation for taking care of Montana and Idaho, you are contemplating impounding water in addition to what General Goethals pointed out there at the dams where water will be supplied by gravity?

Mr. GOODNER. No.

Mr. HUDSPETH. You do not confine yourself to that project?

Mr. GOODNER. Oh, no; but we have done this: We have taken for computation all of the flow into the Flathead Lake and we have subtracted from that the water adequate for all these lands north of Flathead; then we have based our storage and our demands upon what is left.

Mr. HUDSPETH. The reason that I asked that question is that you stated it would only supply 1,750,000 acres—the dam that he pointed out there on the right.

Mr. GOODNER. That was not quite clearly put.

Mr. HUDSPETH. I say he stated that.

Mr. GOODNER. That is all we contemplate putting in, but in figuring—

Mr. SUMMERS (interposing). But you have other places through the project where other storage that would be secondary would be provided along through the project?

Mr. GOODNER. Yes.

Mr. HUDSPETH. That is what I was trying to get at, when you made the statement that you had made provisions for taking care of Montana and Idaho.

Mr. GOODNER. After we have subtracted that total possible use of the water, we figure that we have an ample supply left.

The CHAIRMAN. How high do you contemplate raising Lake Pend Oreille?

Mr. GOODNER. Lake Pend Oreille would be raised from an average water surface of about 2,054 to an extreme maximum of 2,065 feet above sea level.

The CHAIRMAN. But I mean how many feet?

Mr. GOODNER. Fourteen feet maximum, above low water.

The CHAIRMAN. What damage would that do?

Mr. GOODNER. That is 8 feet below the high-water mark.

The CHAIRMAN. What damage would that do to the city of Sand Point?

Mr. GOODNER. None. I personally directed the surveys at Sand Point and met with the mill owners there, the sawmill men, members of the city council and the city clubs, and they agreed that any regulation holding the water between 2,060 and 2,065 will be of benefit to them; that even a possible 2,067 would not do them serious damage, but our maximum contemplates 2,065.

The CHAIRMAN. The Government would not be called upon to pay any damages on account of overflowed land around Lake Pend Oreille, so far as the city of Sand Point is concerned?

Mr. GOODNER. No; we estimated every lot, every building, mapped every building and every structure that will be affected and the cost to replace it, and our total damages around the lake are in the neighborhood of \$1,000,000. Now for storage of one and one-half million acre-feet, that is very cheap storage.

Mr. HAYDEN. Now tell us about the dam at Newport and the size of the main canal.

Mr. GOODNER. At Albany Falls, a mile or so east of Newport, there exists a natural waterfall of 9 feet. There are very huge rock outcrops there, and we propose to put in four or five concrete piers and put in removable or rising iron gates, of course concrete protected, raising the water there to an elevation not exceeding 2,065. That elevation would back the water 18 miles up the river and into the lake, that one dam control. During a flood period, or when running off log booms, or anything of that kind, we have provisions for opening one or more of those gates and shooting through whatever it is necessary to pass. Then, just above the dam, taking out of the lake directly, we drive a 3-mile tunnel from this point across into the Little Spokane River watershed.

Mr. SINNOTT. Wouldn't you have your dams in during the flood period?

Mr. GOODNER. We would raise the gates, leaving the river channel of larger capacity than it is now, until after the natural flood had allowed the lake to drop to the elevation at which we want to hold it. That would avoid any question in case of extreme flood of our dam being responsible for it. There are floods there which go way above our contemplated storage.

Mr. SINNOTT. When will you withhold the water?

Mr. GOODNER. As soon as the lake—the lake is here, at high water [indicating]; as the flood goes down it reaches this point, which is 2,065. At that point we close our gates and prevent further dropping.

Mr. SINNOTT. Is that zero?

Mr. GOODNER. That is zero, so far as the top of our storage is concerned. We count from there down.

Mr. SINNOTT. Is that the low water in the lake?

Mr. GOODNER. No; that is 2,065. Low water runs in the neighborhood of 2,048 to 2,050. You see, before it gets to low water we close the gates and hold in there the amount needed. If we should close the gates during extreme flood it would result in making the flood crest higher yet and would subject us to damage, of course—to paying damages.

Mr. HAYDEN. When you build this tunnel how big is the main canal?

Mr. GOODNER. After we leave the tunnel—the tunnel, by the way, is twin bore, 32 feet in diameter and 29 feet depth of water, horseshoe shape—we come then to the canal. In that section we drop into a rather steep grade canal. The water runs 60 feet wide on top and 29 feet deep. That canal is lined with solid concrete, steel reinforced, not only for strength but to stand expansion or contraction due to temperature changes, so that it will not be damaged by winter.

After we get down to the project where the lands are flatter, we change the section of the canal and carry the water 20 feet deep and on a flatter slope, running the canal 120 feet wide.

The CHAIRMAN. What is the length of the tunnel?

Mr. GOODNER. The tunnels aggregate about 34 miles. The longest individual tunnel is made up by building eight short sections, each less than 2 miles, connecting with each other to get an aggregate underground length of 15½ miles. That takes us through the governing ridge between the Spokane watershed and the lands to be watered.

The CHAIRMAN. Then, in contemplating the expense in building the tunnels, did you have in mind any new device of building tunnels, or do you expect to blast out in the old-fashioned way?

Mr. GOODNER. Not quire in the old-fashioned way. We sent Mr. Turner, who was then our chief engineer, on a long trip through the East. He went to the Shandaken

tunnel that was built for the New York water supply; he went to the Hetch Hetchy, which was built for the San Francisco water supply, and other similar works; he found their methods, and then we got Mr. A. C. Dennis, who is one of the greatest tunnel men in this country, and paid him as a contractor, to estimate the camps, equipment, and cost of building those tunnels. His figures checked almost identically with ours.

The method is very simple, using ordinary steam shovels, electric or air operated, and standard-gauge railroad trains—ordinary, usual methods, but on a very large scale. The tunnels are large enough so that you can carry double tracks in them, standard-gauge tracks, which makes for very cheap operation.

Mr. HAYDEN. How about secondary storage on the project?

Mr. GOODNER. You notice in the first place the country along the line lies at an elevation of 1,800 feet. Our canal starts distributing at 1,800 and drops uniformly to the southwest till we get to 500 feet here [indicating]. That country is a lake bed and has also been glaciated, giving us a very large number of deep coulees or canyons crossing it, running southwest and northeast. Our canals come out on the ridges. At a number of places we have located in those canyons possible dam and reservoir sites, aggregating a very large amount of storage. By running the canals outside of the irrigation season we can fill these reservoirs thus creating what we call "secondary storage" within the project. In the next season we can draw from those reservoirs and thus take care of our peak demands for water. By doing that our main canal throughout does not need to be so large to handle the peak demand. Those studies, however, have not been completed and our main canal and all our structures were estimated and based upon handling the peak demand.

Twenty or twenty-five or thirty thousand dollars could well be spent upon further studies of that secondary storage, and undoubtedly will cut ten or fifteen million dollars off from the cost of the major work.

Mr. HAYDEN. The pumping that is to be done on the project areas shown in pink is not from the secondary storage works but from the canals.

Mr. GOODNER. As the canals come down these ridges we find the fall steeper than we can properly control with canals. At 25 different points we have to introduce drops. Some of those drops are as much as 50 or 60 feet and dropping two or three thousand second-feet of water. That gives us a possible power development at the drops in the distributing canals exceeding 180,000 horsepower. The logical market for that horsepower is to hitch it to pumps and pump on to these areas which are above the canals.

Mr. HAYDEN. That pumping will be done from the canals?

Mr. GOODNER. That will be done under either of the alternate developments, either primary pumping or the gravity supply. Either way would have the same secondary pumping to reach these lands, developing power from the drops, with this difference, that the canal from the primary pumping plant, the Columbia Dam project, does not come through within 400 feet as high an elevation as from the gravity plan, and cuts our power for secondary purposes about in half.

Mr. SINNOTT. The blue there on the map on the left is the 1,750,000 acres?

Mr. GOODNER. Yes, sir.

Mr. SINNOTT. And in the pink there are 400,000 acres?

Mr. GOODNER. About 400,000.

Mr. SINNOTT. How much of that land is in private ownership now?

Mr. GOODNER. Including the railroad lands, about 90 per cent of it is in private ownership. The railroad lands, however, have all been virtually promised to the State at \$5 an acre.

Mr. SINNOTT. And about 10 per cent is in public lands?

Mr. GOODNER. State and Federal lands; yes, sir.

Mr. SINNOTT. Have you had any negotiations with the owners of the lands to know whether they will come in under a project, and if so, how? What have you done along that line? Do you contemplate an irrigation district, or what?

Mr. GOODNER. That, of course, is a matter for Congress to determine, what the form shall be. It is the State's recommendation, so far as it goes, that the entire area shall be formed into a State irrigation district under a special law.

Mr. SINNOTT. What do you know that the private land owners will do?

Mr. GOODNER. We have approached—I will not say all of the owners, but a very large percentage of them, either personally or by correspondence; we know not only that they are willing to come into whatever form of organization is recommended by the people who put up the money, the State or Federal Government, but they that are willing to pledge themselves to put a large part of it into development immediately.

Mr. SINNOTT. Now you are familiar with the reclamation law which requires the landowner to dispose of all of his surplus over the farm unit at a price to be fixed by the Secretary of the Interior. Have you taken that up?

Mr. GOODNER. Yes, in anticipation of that, we have done this: We had our legislature pass—we had the people—vote on it and the Supreme Court has passed upon and declared valid a constitutional amendment in the State of Washington which is now part of our constitution, under which the State itself, or our division of the State, has authority to condemn, if the owner does not voluntarily surrender, all excess lands over the unit set in any given project. We are able to use that power in the smaller projects now.

Mr. SINNOTT. Well, then, will the private landowner voluntarily dispose of his land under the reclamation law?

Mr. GOODNER. We anticipate from our correspondence and personal acquaintance—and I know a whole lot of them—that 80 per cent of those owners will be glad to at once sign a contract cutting their own holdings to 40 acres, and allowing the rest to be disposed of at whatever figure the authorities in charge set as a fair figure.

Mr. SINNOTT. Is 40 acres a fair farm unit?

Mr. GOODNER. It is too big in the long run, but it can be handled under wheat.

Mr. HAYDEN. Do you mean to say that a family can make a living off of 40 acres of wheat on that kind of land?

Mr. GOODNER. No; but I say that during the first two or three years, until they get their land in shape for intensive cultivation, they will put it into wheat and get something off of it, whereas now they are getting nothing.

Mr. HAYDEN. It seems to me that 40 acres is too small an area for a farm unit in that country. What is the length of your growing season?

Mr. GOODNER. Two hundred and fourteen days.

Mr. HUDSPETH. What would you produce on that land?

Mr. GOODNER. All diversified crops that are grown now in the Yakima project. And let me correct a statement made this morning—

Mr. HUDSPETH (interposing). That is, alfalfa and corn?

Mr. GOODNER. Alfalfa, corn, and cattle and truck.

Mr. HUDSPETH. Is 40 acres sufficient for a family there?

Mr. GOODNER. It is too much. A man can't handle it properly.

Now, the statement was made that Yakima owes its success to fruit. Less than 20 per cent of the Federal project in Yakima is in fruit.

The CHAIRMAN. What was that statement?

Mr. GOODNER. Less than 20 per cent of the area in the Federal project in Yakima is in fruit. Eighty per cent of it is diversified farming. Of course it is true that half of the dollars and cents produced there is from fruits, but the fruit growers are not as prosperous on the average as the man who is raising corn and chickens and pigs and doing diversified farming.

The CHAIRMAN. And has a dairy?

Mr. GOODNER. Yes, sir.

Mr. HAYDEN. My experience has been that the only legitimate way to figure the success of an irrigation project is on an alfalfa basis.

Mr. GOODNER. Certainly.

Mr. HAYDEN. Do you think that 40 acres in alfalfa with dairy cows is more than one family could properly care for?

Mr. GOODNER. It is more than the average American family can take care of even if they have children to do the milking.

Mr. RAKER. They would not all have dairy cows. You can not take a place like that and imagine that they would all be engaged in one business.

Mr. HAYDEN. If you go exclusively into truck farming, or exclusively into fruit, there is not a market for all of it. The thing that makes a reclamation project successful is the alfalfa field, and to go beyond an alfalfa basis is risky. Therefore, it seems to me that it ought to take more than 40 acres of land under this project to support a family, because on the project where I live in Arizona, the average holding is about 38 acres and we have a growing season that is three months longer than anywhere in the State of Washington. As a matter of fact, we can take some kind of a crop off the ground every month in the year if necessary.

Mr. SUMMERS. You would not want to call ours a short growing season, I think.

Mr. GOODNER. Not 214 days. That is not a short season.

Mr. RAKER. Do you not find that one kind of crop alone is detrimental to a project, everybody going into one thing?

Mr. GOODNER. There is no question about that.

Mr. RAKER. Diversified farming is the only thing that will bring results.

Mr. GOODNER. Before taking up the State land settlement project, which is also under our control, we made investigation, so far as we could by correspondence and literature, of the land settlement projects and irrigation projects of the entire world. We have gotten an enormous mass of data accumulated which we have studied and

compiled and computed over and over again. Our decision was that here at White Bluffs, this green spot [indicating], which the State is now developing as a land settlement project, that 20 acres was the largest unit we could give any man and expect him to successfully and intensively cultivate it, and we are going ahead on the basis of 20 acres, and they are making good.

Mr. RAKER. Isn't it a fact that all of these State settlements are on the best land in the State?

Mr. GOODNER. I do not consider that any of the projects now under State control average anywhere near the average of the lands in the Columbia Basin.

Mr. RAKER. But I am just wondering if it has not been the best land in the State at any of these places where they have had a State settlement.

Mr. GOODNER. Not in Washington, by any means.

Mr. RAKER. With the best railroad facilities, with town facilities close by, with water, and in fact everything that goes to make up a community if it is properly applied.

Mr. GOODNER. I will answer that in this way: We hope if we are lucky, in the next five or six years to make our White Bluff settlement able to hold up its head alongside of the Yakima development.

Mr. SINNOTT. What is the size of the farm unit on Sunnyside?

Mr. GOODNER. Mr. Beadle could answer that, perhaps.

Mr. BEADLE. I think it runs between 40 and 50 acres, but I do not carry the figures in my mind.

The CHAIRMAN. How far is this settlement you speak of, of the soldiers, from the railroad?

Mr. GOODNER. We are on a subline of the Milwaukee, which sends one car and engine down one day and back the next. We are 45 miles by stage from Kennewick.

The CHAIRMAN. That answers Judge Raker's question, then, that the most successful projects are on the best land with the best facilities.

Mr. RAKER. That was successful farming country in there?

Mr. GOODNER. Yes.

Mr. RAKER. And you have irrigated it?

Mr. GOODNER. Yes.

Mr. RAKER. And you divided it up, and most of these people have something else to do besides farming?

Mr. GOODNER. No, our State law required us to take and put them on absolutely raw land. We wanted to put a project over here [indicating] and the Attorney General ruled that because that land had been broken a number of years ago, although not now cultivated, it did not come within the State's definition of raw land, and we have to take absolutely sage brush land and put the boys on it.

The CHAIRMAN. How many boys have you there?

Mr. GOODNER. Thirty-five at present, and by spring we will have 58. There are 58 tracts there, but they are not all ready for settlement yet.

Mr. SINNOTT. What is the area of the N. P. land?

Mr. GOODNER. Forty thousand acres, about.

Mr. SINNOTT. What arrangements have you made with the company?

Mr. GOODNER. Simply a letter from their head officials saying that at the time the project was ready to go they will turn that over to the controlling authorities at \$5 an acre.

Mr. HAYDEN. Are you sure that your drainage costs will not be great?

Mr. GOODNER. Yes, for this reason: According to the map which we have in the general-project report, showing the drainage lines, which have already been surveyed, we have got our lines surveyed where the drains will come between every pair of canals, and we have got 15,000 miles of canals surveyed. We have every drainage lateral located now as nearly as it can be in advance of the water. We have found in the Quincy Valley, which is flat, that we are going to have to construct drainage ditches. We have surveyed them and located them and know what it is going to cost to put the in. We find here north of Pasco that there is a blind draw in there where water will accumulate. We have figured on opening that up. Everywhere on the project that drainage is necessary as near as can be predicted in advance we have worked out just what should be done.

Mr. HAYDEN. It has been the situation on practically every irrigation project heretofore undertaken that the cost of drainage has been underestimated.

Mr. GOODNER. Yes; and that is largely due to the fact that until very recently we had not had projects in operation long enough to get a basis upon which to predict our drainage in advance of the need arising; now we have gotten that data, and the engineers of the Reclamation Service and engineers in private business know to-day about what different soils and different subsoil conditions will create in the way of

needing drainage, and when we figure a project to-day all of our State projects, new ones—we have 20 of them under way now—in all of those we go ahead and predict our drainage and costs just as accurately and as far in advance as we do where the canals are going in to bring the water in. Furthermore, we are going to attempt to get the legislature in our State to make the handling of drainage a compulsory part of the duties of the irrigation district.

Mr. HAYDEN. It ought to be.

Mr. GOODNER. Instead of having separate districts, the whole water problem of the district should be under one control.

Mr. SINNOTT. What is Mr. Pierce doing at Priest Rapids?

Mr. GOODNER. He is drilling a possible dam site. He also told me that unless he could find a market for a certain large block of horsepower the development would probably be in abeyance for some time.

Mr. SINNOTT. Is this soil generally a sandy soil?

Mr. GOODNER. Yes.

Mr. SINNOTT. What is it, red sand or white?

Mr. GOODNER. White. This entire area, extending clear up the Columbia River and over into the Yakima country and down into Oregon, is the bed of what geologists say was the old John Day Lake. As that drained out it left a uniform sandy silt over practically the entire area.

Mr. SINNOTT. Is that the same character of soil as they have around Hermiston and Umatilla?

Mr. GOODNER. It is a much finer grade of soil. These soils have been reworked by the wind and by the lava flows which have come in. In this area around Pasco, near Burbank and Umatilla and in through there, they have a very coarse-grained soil, with very little fine silt in it. [Indicating on map.] From here north, up the Yakima and up the Wenatchee, we have a very fine water-holding silt.

Mr. SINNOTT. Is that something like the soil between Prosser and Ontario?

Mr. GOODNER. Yes, sir.

Mr. SINNOTT. I have been across that country from Prosser over to Erie.

Mr. GOODNER. It is very similar to it.

Mr. RAKER. How many State land settlements do you have?

Mr. GOODNER. At this time we have just one.

Mr. RAKER. Well, that land had been settled and cultivated before you opened your project?

Mr. GOODNER. Areas in it had, but not the areas that we are developing.

The CHAIRMAN. How large an appropriation have you?

Mr. GOODNER. We have spent \$150,000 out of an authorization of \$300,000.

Mr. RAKER. Are these ex-service men married men?

Mr. GOODNER. Practically all of them are.

Mr. RAKER. Did they come in with any means?

Mr. GOODNER. Yes. We require them to show sufficient means to sustain their necessary living expenses for one year. That is one of the several requirements.

Mr. RAKER. And you give them 15 acres?

Mr. GOODNER. Twenty acres.

Mr. RAKER. Twenty acres with a barn and house and outbuildings?

Mr. GOODNER. And the well and pump.

Mr. RAKER. And they have to pay how much per acre?

Mr. GOODNER. Their total cost, depending upon the type of house they choose—they may choose from several types and they may also choose what improvements they want—the cost varies from \$200 to \$500 per acre. If they want us to go in and clear the land and plant it for them, we get close to \$500 an acre debt to the State.

The CHAIRMAN. He is only charged actual cost?

Mr. GOODNER. Yes, sir.

The CHAIRMAN. Then he pays interest at 4 per cent on the amount advanced?

Mr. GOODNER. Yes, sir.

Mr. RAKER. That is a pretty good start for anybody, isn't it?

Mr. GOODNER. It is lots better than my father had.

The CHAIRMAN. If he is paying 4 per cent on \$500-an-acre land he has to raise crops at a profit of \$20 an acre to meet that expense.

Mr. GOODNER. That is the limit.

The CHAIRMAN. Over how many years is that extended?

Mr. GOODNER. Twenty years; sooner if he can pay it off. They may also get deferred interest for three years in case of certain conditions, like sickness in the family or things of that kind. We have liberty of giving them deferred payments on the interest.

Now, one more point which perhaps has not been made clear. When the State started this work we knew that \$100,000, which was all we had in the first appropriation, would not get us hardly anywhere, so we sent out broadcast an appeal to all agencies possible for assistance. The different railroads—there are five of them crossing there—furnished us copies or the originals of their original location surveys and their land reconnaissance maps. The numerous mortgage loan companies furnished us with their original data in an enormous mass. The State University, the State college at Pullman, and the Federal Land Bank, and various other agencies turned over to us not only their records but loaned us men without expense. So that we had at the start, before we had spent a dollar, better than \$300,000 worth of maps and records in our vaults. We were able at once to put competent engineers at work studying and analyzing those records. We made a paper location in the office from all those maps before we ever went into the field. We then sent men out with aneroid barometers and checked in the field before we put the survey instruments out, instrument parties, of course, being expensive. As a result of that work, out of 1,200 miles of precise location lines, the engineers' precise location, there was less than 10 miles that had to be rerun.

By methods such as that; by the absolute presentation to us from everybody who had any information on the area, we figured, and frankly acknowledged to the people concerned, that the State has had better than half a million dollars worth of data placed in its hands on that project. It is because of that and the further fact that the United States Geological Survey has very largely made the topographic maps of that area, and that the United States Reclamation Service has a lot of data derived during the study of the Big Bend project, and the engineers of the United States Reclamation Service sat right in and worked with us on this work, that we have been able to turn out a report, a study, which, as General Goethals says, is much more complete than you would anticipate with the actual amount of State money we have spent.

Mr. HAYDEN. Did you have the benefit of a soil survey by the Bureau of Soils?

Mr. GOODNER. Yes, three of the counties have been mapped and the soil survey published. It covered practically the entire area, all except one little corner of it. This little corner here [indicating] has not been covered; the rest of it has.

Mr. HAYDEN. Was any alkali found in the soil?

Mr. GOODNER. There was only one place in the entire area where there was alkali found. That is a sink hole right here [indicating], and we are figuring on using that sink hole as one of our waste way areas. That is something that we have worked out in detail on all of the project, because it is inevitable that on cloudy days the people will shut down the use of the water, or when an occasional sprinkle comes they will shut down the use of the water, and we have studied out on the entire project wherever waste will take place, and we have estimated the cost of discharging that water to the nearest secondary storage or to the river.

Mr. HAYDEN. That is all rolling land, as I understand it?

Mr. GOODNER. It is rolling, except in three areas. Quincy Valley is flat and Rattlesnake is flat. Right in here is flat [indicating], and Paradise is flat. Those are comparatively small areas. Even those flats, with the exception of Quincy, have a tilt of about 8 or 10 inches to the mile, which is sufficient for drainage. Quincy is a basin, and we have to dig a way to get the water out.

Mr. HAYDEN. And the rest of the project would be irrigated by constructing laterals from the main canal that would generally follow the contour lines along the ridges?

Mr. GOODNER. Follow the ridges; yes.

Mr. SINNOTT. Do you know the minimum flow of the Columbia at the junction of the Columbia and the Snake?

Mr. GOODNER. It is about 50,000 second-feet.

Mr. SINNOTT. It is 50,000 second-feet at the dam.

Mr. GOODNER. Well, of course, it is a little less, a very little less, than that at Pasco.

Mr. SINNOTT. Well, you have the Deschutes River coming in and the John Day.

Mr. GOODNER. Yes, sir; and a number of others.

Mr. SINNOTT. The Deschutes is about the same at the minimum as it is at the maximum?

Mr. GOODNER. Yes.

Mr. SINNOTT. Because it has no fluctuation.

Mr. GOODNER. No; that is only a few thousand feet flow, though.

Mr. SUMMERS. How extensive is that alkali area to which you referred?

Mr. GOODNER. It is about a mile square. It is in the bottom of a deep depression. It represents the drainage from perhaps 200 miles square, this area in here [indicating]. It all comes into that trap. There is no outlet to it. Some years there will be 20 feet

of water there and some years none, and when there is none you can see the alkali. That represents a drainage, as I say, of a couple of hundred square miles.

Mr. SUMMERS. It does not require a very large storage basin.

Mr. GOODNER. I made one trip, gentlemen, out here from Connell to Othello and up to Quincy, and on that trip we passed 16 abandoned schoolhouses. Now, for an American community to give up its schoolhouses things must be in a bad way.

Mr. RAKER. What is the occasion for that? What is the matter?

Mr. GOODNER. There is not a soul left in that country.

Mr. RAKER. For what reason?

Mr. GOODNER. Ten or fifteen years ago we had a cycle of abnormal rainfall; at the same time we had an abnormal land rush. People came in and homesteaded that country and the land was practically all taken. They survived anywhere from 1 to 10 years. Last year I was in this area of 280,000 acres and there were only two men left there, and one of them said: "I am going this winter, because I am eating the last of my chickens now." That area has been abandoned because they can not grow any crop on it.

Mr. RAKER. Now, that raises the question: Where are these people and are they still claiming title to this land?

Mr. GOODNER. They are remarkably well keeping up their taxes on the land. A large part of the owners are working in industrial centers here, in the logging mills in the Grays Harbor country, and we have been able to reach a large part of them by correspondence. I have been down there and talked to lots of them, and they are willing to come back there and start with the cheapest crop they can get in for a year or two, which is wheat. Now with water they are good for 50 or 60 bushels of wheat to the acre, and in most years wheat is a pretty good crop. Once in a while, you know, they do not get a very good price for it, but take it year in and year out it is a pretty good crop, and by gradually switching over a few acres a year from what they have got in wheat into more intensive cultivation, we figure that it will be a comparatively simple matter for the bulk of those owners to bring their land under intensive cultivation.

Mr. RAKER. Is anyone buying up this land in large tracts, buying out these owners? Mr. GOODNER. Not that we know of, and we immediately would try to put a stop to it if we did know it.

Mr. SINNOTT. You are familiar with the other irrigation in the locality of the Columbia Basin project?

Mr. GOODNER. Yes, sir.

Mr. SINNOTT. How many tons of alfalfa will they raise annually?

Mr. GOODNER. The average farmer will raise five or six tons but the good farmer will raise 8 tons. Taking them all alike, we find that on the Yakima project, which includes areas that were being hogged and a lot of land that was partially water logged, they raise 3.3 tons per acre. We sent a man on the Yakima project, after that figure was published, to find out why the yield was so low, and found that the farmers who are real farmers on the Yakima project will raise from five to eight tons. We found one authentic record of 9 tons per acre on a 20-acre field.

Mr. SINNOTT. What is the average price for alfalfa?

Mr. GOODNER. Two weeks ago they were getting \$20 a ton in the field.

Mr. SINNOTT. Where was that?

Mr. GOODNER. In the lower Yakima.

The CHAIRMAN. That is nearly twice as much as we are getting in Idaho.

Mr. GOODNER. I surmise we have more feeders there than you have.

Mr. SINNOTT. It is a very superior alfalfa that is raised in that latitude.

Mr. GOODNER. It would not be fair to the other districts to claim that, and I do not think it is noticeably different.

Mr. SINNOTT. You have heard of the comparison between alfalfa raised in a cold climate and in a warm climate?

Mr. GOODNER. Yes, sir.

Mr. SINNOTT. And that it has more nutrition in it?

Mr. GOODNER. Yes, sir.

Mr. HAYDEN. I believe that is largely a myth.

Mr. GOODNER. Of course, gentlemen, I could take two or three hours in discussing the points I have not yet touched, but unless you ask questions I assume they are matters of no particular interest.

The CHAIRMAN. If you have finished your general statement we will adjourn until to-morrow morning at 10.30 o'clock, and in the meantime if you have something else to submit you may present it.

Thereupon the committee adjourned to meet Thursday, December 7, 1922, at 10.30 o'clock a. m.

COMMITTEE ON IRRIGATION OF ARID LANDS,
HOUSE OF REPRESENTATIVES,
Thursday, December 7, 1922.

The committee met at 10.30 o'clock a. m., Hon. Addison T. Smith (chairman) presiding.

There were present before the committee: Hon. J. Stanley Webster, a Representative in Congress from the State of Washington; Mr. Francis M. Goodwin, Assistant Secretary of the Interior; Mr. Morris Bien, acting director of reclamation; Mr. Ivan E. Goodner, chief engineer, Columbia Basin survey; Mr. Fred A. Adams, supervisor Columbia Basin survey, and Mr. J. A. Ford, Columbia Basin League, State of Washington.

The CHAIRMAN. The committee will be in order.

Mr. WEBSTER. Mr. Chairman, Mr. Goodner is here this morning. Has any member of the committee thought of anything over night that they want to ask him about further? If not, we will call Mr. Fred Adams, supervisor of the Columbia Basin under the Department of Conservation and Development of the State of Washington.

The CHAIRMAN. Is there anyone present who wishes to ask Mr. Goodner any questions following his testimony of yesterday? If not, Mr. Adams will address the committee.

STATEMENT OF MR. FRED A. ADAMS, SUPERVISOR COLUMBIA BASIN SURVEY, STATE OF WASHINGTON.

Mr. ADAMS. Mr. Chairman and gentlemen of the committee, my name is Fred A. Adams. I am supervisor of the the Columbia Basin project under the Department of Conservation and Development of the State of Washington. I have been connected with the Columbia Basin project almost from its inception.

This project originated with the people of the State of Washington before it was taken to the State legislature. It was originated because we knew in the Pacific Northwest that practically all agricultural lands capable of development were exhausted as far as homestead entries were concerned. The only available lands left for agricultural development were arid lands, much of which lay within this great Columbia Basin plateau or within the big bend of the Columbia River. There was felt that an inventory of our lands was necessary. Through chambers of commerce, county commissioners, city commissioners, and the people on the project itself, this request for an inventory was made to the legislature. To determine what the inventory of the State was with regard to its arid lands, the legislature appropriated the first \$100,000 for a preliminary survey.

When the proposal was placed before the legislature it was admitted that the proponents did not know whether the Columbia Basin project was feasible or not. It was realized, however, that this great basin area was a liability to the Pacific Northwest, and unless there was some means of getting water on it, it would continue to be a liability.

After four years of intensive investigation, as far as our means permitted, we, in our own minds at least, have determined that we have one of the greatest potential assets in the Pacific Northwest. We believe it is a potential asset for this reason: Our timber resources are being rapidly depleted; with each ton of ore taken from our mines an asset is being depleted. But this project is one resource that will create economic stability with surrounding States and with the rest of the United States.

This project, as General Goethals and Mr. Goodner and Mr. Goodwin told you yesterday, represents approximately 3,000,000 acres of land. We believe that within the area we can irrigate approximately 2,000,000 acres of land. On the assumption that there are only about 20,000,000 acres in the entire West which can be reclaimed by the application of water—and of course you all know that that is not the extent of the land that could be irrigated if more water was available—water being the controlling factor, we have the very fine situation in this Pacific Northwest of having for this project, not to speak of power development that will be incidental to it, three times the quantity of water necessary for irrigation.

It would tire you, and it would be useless for me to go into great detail about the economic phases of the Columbia Basin project. Therefore, I am only going to touch here and there on some of the things that you might be interested in as members of this committee. As a matter of comparison let me first cite the Yakima project, to which your attention was called yesterday.

In the Yakima Valley, including the private development and Federal reclamation, there are approximately 300,000 acres of land. That 300,000 acres of land over a period of five years has produced on an average \$34,000,000 in new wealth annually.

Mr. SINNOTT. How far is that from the Columbia Basin?

Mr. ADAMS. That is just across the Columbia River here [indicating on map].

Mr. SINNOTT. I mean in miles. I know where it is but I want to get it in the record.

Mr. ADAMS. I would say it is about 40 or 50 miles from the Columbia Basin, or from the western edge of the Columbia Basin, to the Yakima Valley itself.

Mr. SINNOTT. What is the market value of land on the Yakima?

Mr. ADAMS. The market value of land on the Yakima under diversification ranges from \$250 to \$300 an acre. It goes from that up to \$1,000 and \$1,200 for very intensively cultivated fruit land.

Mr. LITTLE. Just what do you mean by "diversification"?

Mr. ADAMS. The growing of alfalfa, wheat, live stock, not specializing in fruit or one crop.

Mr. LEATHERWOOD. Is that the present market value you have given?

Mr. ADAMS. That is the present market value.

Mr. SINNOTT. It was much higher during the war, was it not?

Mr. ADAMS. Yes; it was considerably higher than that during the war. When you go north from the Yakima into Wenatchee you find tracts that are valued and are sold as high as \$1,500 per acre, but they, too, are specialized fruit tracts.

Mr. SINNOTT. How far is Wenatchee from the Columbia Basin?

Mr. ADAMS. Wenatchee is north here [indicating]. I should say 25 or 30 miles north of the project. Bear in mind that the Columbia Basin area in soil and climate is equal to and in many cases superior to either the Wenatchee or the Yakima project. Bear in mind also that it is not our expectation and not the expectation of the State that this will become a specialized fruit project.

Mr. LITTLE. Is this the area, the Yakima? [Indicating.]

Mr. ADAMS. That is the entire Yakima Valley. That represents about 100,000 acres of the United States reclamation project. [Indicating.]

Mr. LITTLE. That is what you were talking about?

Mr. ADAMS. When I said 300,000 acres I was taking in the entire Yakima Valley.

Mr. LITTLE. Which is the place where they sell it for \$1,000 an acre?

Mr. ADAMS. Various places where it is very intensively cultivated as to fruit. Practically all of this 300,000 acres is really a diversified farming section, but there are very highly developed apple orchards.

Mr. LEATHERWOOD. Is your market value based upon actual sales or upon estimates?

Mr. ADAMS. They are based largely upon sales: the going prices received by real estate men in Seattle, Tacoma, Yakima itself, and various places where the sales are made.

The CHAIRMAN. The statement was made yesterday that the growing season in the Columbia River Basin was longer than at Yakima.

Mr. ADAMS. About two weeks longer, on an average, than the Yakima. The growing season is about 217 days, on an average.

The CHAIRMAN. Why is that?

Mr. ADAMS. That is due largely to the fact it is one great plane; it is farther away from the Cascade Mountains; is not subjected to cold winds in the early spring and the late fall; by better contour; and by a southwest exposure of the land.

The CHAIRMAN. It is a lower altitude, too, is it not?

Mr. ADAMS. Some parts of it, yes; but on the whole I would say that it is about equal.

Mr. SUMMERS. Wouldn't you say also, Mr. Adams, that warm winds from the Japan Current which come up to the Columbia modify the climate?

Mr. ADAMS. This whole area is subjected to the southwest winds.

Mr. SUMMERS. I mean wind currents from the Japan Current.

Mr. ADAMS. They are mild winds and tend to warm the atmosphere.

The reason this whole area is arid is because the moisture striking the great Cascade Range, a very high range in the western part of the State, is intercepted [indicating], and most of the rainfall is west of the mountains. The rain clouds are uninfluenced by the warm winds that go up from this overheated great plateau. There is not sufficient cooling to condense the moisture, and it goes eastward until it strikes the Bitter Root Mountains. The moisture is then precipitated east of the basin area. That causes the very low rainfall upon the area itself, varying from 6 to 10 or 12 inches.

We hope and expect that this will become a great diversified farming area, not utilized for intensive fruit production, because we believe that with the capital invested and the more immediate return to the farmer his returns will be safer and more assured over a long period of years than if he specialized in fruit. To continue the comparison, if this 300,000 acres of land in the Yakima produced on an average \$34,000,000 per year over a five-year period, the Columbia Basin area, all things being equal, would over a number of years return an annual wealth to the Nation of approximately \$200,000,000 a year.

Mr. ARENTZ. While you are on that point, Mr. Adams, what have you to say in answer in opposition to the statement made by those in Minnesota and Iowa that we have overproduction now; that every acre added to the tillable land would merely mean that much more competition? I side absolutely with you; I want to see the land put into cultivation over the country, but I think on this point, when you speak of the amount of production you should answer that criticism.

Mr. ADAMS. I will be very glad to answer that, Mr. Arentz. In the first place, under normal conditions, as those who have gone into the economic phases of it believe, this situation will not exist very long. For instance, if the policy of restricted production had been adopted by the United States Government shortly after the Civil War, and our agricultural development had been arrested because of the same criticism that was made at that time, we would not be producing the great quantities of corn and the great quantities of wheat that we produce now; in fact, we would not be producing enough for home consumption, not to speak of export; and if that policy had been adopted by the Government we would not have been able to send food to our allies during the war. I think as a consequence there would have been a considerable breakdown so far as food was concerned.

Mr. SINNOTT. That policy was adopted and that was one of the reasons assigned by Hugh Cannon for vetoing the original homestead act, which Lincoln afterwards approved.

Mr. ADAMS. Yes, sir; that is very true. That argument was advanced at that time and very strongly urged upon the Government.

Mr. LITTLE. Supposing it is true that we are producing too much and that we are going to keep on at it, can you suggest any way in which the Government could take care of the overproduction, any market that it could establish or secure somewhere?

Mr. ADAMS. We will take our eastern markets for example—when I say “our eastern markets” I mean our far eastern markets—I think those who have studied the economic trend on the Pacific Coast realize that far eastern markets are developing very rapidly. That is shown in our increased quantity of shipments, by our exports to the Orient. That permits an additional outlet for many of our products.

Mr. LITTLE. Have you familiarized yourself with that enough so that you can say to us that you think we will have an oriental market of any considerable proportions for our agricultural products?

Mr. ADAMS. I can say that I have investigated it to this extent: Figures from the Commerce Department show increased shipments of agricultural products, which indicate a tendency for wider eastern markets. No one can predict very far into the future what our shipments are going to be, but I say that that tendency is now manifesting itself.

Mr. LITTLE. Of course, there isn't anybody claiming that there is an oversupply of fruit, is there?

Mr. ADAMS. The main objection now is that there is not enough transportation to move the fruit that is being raised. It is a marketing question; it is not wholly a question of production at this time.

Furthermore, answering Mr. Arentz's question, I will say that the products raised upon these diversified, irrigated areas are not competing with the products of the Middle West. For instance, take alfalfa. Alfalfa is being used largely for feeding livestock in the western area and is shipped to markets in the Middle West and the East where alfalfa is not grown. Alfalfa is peculiarly a product adaptable to irrigated areas. The same is true of sugar beets. They are largely, with the exception of those grown in Minnesota and Michigan, not in competition with other products.

Mr. LITTLE. Do I understand you to say that there is more alfalfa grown on irrigated land than on other land?

Mr. ADAMS. Than on nonirrigated land.

Mr. LITTLE. That is an actual fact, is it?

Mr. ADAMS. Yes, sir: that is an actual fact. As to sugar, bear in mind that we are an importing Nation. With the development of this area by reclamation and the growing of sugar beets we would tend more nearly to balance sugar production and consumption within the United States.

Mr. SINNOTT. You mean there is more alfalfa grown in gross or per acre on irrigated land?

Mr. ADAMS. More per acre.

Mr. LITTLE. Oh, well, of course; but you do not mean to say that there is more alfalfa grown on irrigated land than on other land, do you?

Mr. ADAMS. I would not say that, because I have not looked into the total quantities grown on other lands.

Mr. SUMMERS. Would you not make some reference to the natural increase in population in the United States and consequent greater consumption?

Mr. ADAMS. That is a factor that I was getting to, Mr. Summers. If we take the figures of the Department of Agriculture, showing the necessity of bringing in an additional six or eight million acres per year to take care of the normal increase in population for the next 30 years, it would mean that such areas as this must be developed in a comparatively short time in order to take care of that absolute need.

Mr. ARENTZ. Don't you think, Mr. Adams, that your best argument—in fact, it is the best argument from my point of view—is that the increase in population on the Pacific coast within the next 10 or 15 years is going to be so great that unless we do something now which will be spread over a 10-year period of development we are going to be lacking in sufficient foodstuffs to supply the needs of the Pacific coast?

Mr. ADAMS. I think that is true. And I think you can go further than that and say, Mr. Arentz, that in our 11 arid Western States—that is, the 11 States farthest toward the Pacific—we have a population at the present time of a little less than 9,000,000; whereas, east of that block of States there is a population of over 96,000,000. Many of that 96,000,000 will be glad of an opportunity to settle upon land that they know will bring a return much greater than they could secure upon lands in the humid regions of the United States. For instance, the United States Reclamation Service shows that the production per acre per year is twice as much upon these irrigated tracts as it is in the humid regions.

Mr. LEATHERWOOD. Is that true as to crops generally?

Mr. ADAMS. Yes, sir; that is true as to crops generally. The average per acre is twice as much upon irrigated lands.

Mr. LITTLE. Is it not true that the investment is so much greater in an irrigated acre that really the percentage of profit is less than it is on unirrigated land?

Mr. ADAMS. No; I think not. If you base it upon the value of your Iowa lands and other lands in the corn States, I think you will find that the investment is not greater upon the irrigated land per acre than it is upon those high-priced lands in the Middle West.

Mr. LITTLE. I knew a very large farmer on the Nile who did not irrigate his wheat crops, and he told me that he could make more money per acre by not doing it; the natural crop was good enough so that if he paid for his water for irrigation he would not make as much as he would if he had raised his crop without it.

Mr. SUMMERS. The cost of irrigation would enter in there, too. I understand that in Egypt water rights are knocked off to the highest bidder year by year.

Mr. ADAMS. The increase in agricultural land in the valley of the Nile has been of tremendous benefit not only to Egypt but to England, which appropriated the money for building the structures. For this reason the exports from England and her colonies to Egypt have increased greatly over what they were under the limited irrigation before the Government made the appropriation.

Mr. LITTLE. What money did England appropriate to build irrigation projects for Egypt?

Mr. ADAMS. They appropriated the money to build the great Assouan Dam and other projects in India.

Mr. LITTLE. To build the Assouan Dam?

Mr. ADAMS. Yes, sir.

The CHAIRMAN. They put in \$25,000,000, did they not?

Mr. ADAMS. I don't remember the amount.

Mr. LITTLE. Who did?

The CHAIRMAN. The British Government.

Mr. ADAMS. The British Government has adopted the policy of building these great irrigation projects in Egypt and in India as capital investments without return to the Government of the money and without the charge of interest.

Mr. LITTLE. Egyptian projects were not appropriated for by England at all, as far as I can recall. I suppose you have some reason for saying so, or you would not say it.

The CHAIRMAN. I am not saying it as a positive fact, but that is my impression that they appropriated for it.

Mr. LITTLE. I never heard of them appropriating any money for Egyptian projects.

Mr. ARENTZ. Do you not think, Mr. Adams, that the development of this area will be comparable with the development of the Nile—that is, in proportion—in the way of exports coming from the eastern part of our country, if you call them that—the same as exports came from England to Egypt after the development there?

Mr. ADAMS. Comparing it in that way, Mr. Arentz, I would say it would be of a great deal more value to the United States than has been the development of Egypt to the British Empire, for this reason: Most of the manufactured products used at this time in the West are not manufactured in the West, but are shipped to the West from eastern manufacturing centers. There can be placed upon this area in the cities and upon the land when it is developed a population of approximately 500,000 people,

and these people will expend, based upon figures we think reasonable, \$100,000,000 a year in eastern manufacturing centers for products manufactured and shipped to the West for the use of the people on the project. That means that all of the eastern manufacturing centers are vitally interested not only in this development, but in the development of other worthy projects in the West.

Mr. LEATHERWOOD. Mr. Adams, we have, I think, been diverted somewhat from your main discussion, and I want to ask you a question at this time, inasmuch as we are off the subject. This question may have been answered, but what per cent of the lands within the Columbia Basin project, as shown on the map, are privately owned and what per cent is still in Government ownership?

Mr. RAKER. That was all gone into yesterday.

Mr. ADAMS. I would put it this way: That 5 per cent approximately is owned by the Northern Pacific, a very small quantity by the State and the Government. The rest of it is in private ownership, at least 90 per cent of it, and of that 90 per cent approximately half is in holdings of 360 acres or less, and the other half is in holdings of more than 360 acres.

Mr. LEATHERWOOD. Now, the question that I am particularly interested in is this: Are the owners of the land upon the land now?

Mr. ADAMS. Very largely not. The area is becoming rapidly depopulated because of the arid condition that exists and the great hazard of trying to grow a crop under dry-farming methods.

Mr. LEATHERWOOD. So far as you know, generally speaking, are the owners people who are living in the community or are they city dwellers?

Mr. ADAMS. I would say that a great many of them are men who have been driven off the area by aridity and are now in the logging camps, on the railroads, or in the mines. Some of them are in the cities in the Pacific Northwest territory.

Mr. LEATHERWOOD. And not engaged in agriculture; not as a rule engaged in agriculture?

Mr. ADAMS. No, sir; not as a rule.

Mr. LEATHERWOOD. Have they, so far as you know, for any considerable period ever been engaged in agricultural pursuits?

Mr. ADAMS. Yes. These people were encouraged to take up agricultural lands, not knowing the conditions under which they had to labor; they moved upon this area and hoped they could grow a crop. Many of them stayed five, six, or seven years and then failed; were compelled to move away and did not have the money to go upon other agricultural lands. But their desire, I believe, from conversations with representative groups of them, is to go back to the land as soon as it can be made fit for cultivation.

Mr. LEATHERWOOD. Have you any information as to whether or not as a result of the climatic conditions and the people leaving the land there has been any considerable sale of the land within recent years by the original owners?

Mr. ADAMS. There have been some large tax sales. The men who lived upon it were unable to pay their taxes. Many tax certificates have been purchased.

Mr. LEATHERWOOD. Now, as to those sales, is it a fact or is it not a fact that they are in the hands of a very few people?

Mr. ADAMS. No; I would not say that.

Mr. LEATHERWOOD. State what are the facts, if you know them?

Mr. ADAMS. I would say that those tax certificates are distributed rather widely over the State and mainly within the State of Washington.

Mr. LEATHERWOOD. So far as you know—if you have any information on the question—are they in the hands of persons who are interested in agriculture or expect to engage in agriculture?

Mr. ADAMS. To answer that question frankly, I would say that these tax certificates were bought at such an outrageously low figure that the present holders are holding them with the expectation of making a profit upon them.

Mr. ARENTZ. While we are on that point, do you think it makes any difference whether or not the land is opened in large areas by a man in a logging camp or a man in a city, so long as that land when it is put under cultivation is divided up into 80-acre tracts and sold to the man that wants to go on to the land and make a home there?

Mr. SUMMERS. At a reasonable price.

Mr. ARENTZ. Yes; at a reasonable price.

Mr. ADAMS. That is our contention, Mr. Arentz. We believe that this project will be divided into farm units of not more than 40 acres, and that there will be a great demand for that land at reasonable prices when the area is placed under water.

Mr. RAKER. Now, finishing the matter started by the gentleman from Utah [Mr. Leatherwood], can you not give us some estimate as to the amount of this land that is now held by people who bought it at tax sales?

Mr. ADAMS. That would be very hard to answer offhand and give you the exact figure.

Mr. RAKER. It can be had, can it?

Mr. ADAMS. It could if we went into the records of the county assessors. Mr. Goodner, I think, personally made an investigation of that matter and could give you more specific information.

Mr. GOODNER. May I just say one thing in answer to your question, Mr. Raker? We personally went over the county records in the four counties involved, listed the owners of record of every tract of land, amounting to a great many thousand pieces, and we found that the large proportion of the tax sales have been made to the large wheat and stock growers in the Palouse country to the east and in Lincoln County and the Big Bend country to the north. They are holding those lands partially for a small amount of winter grazing—the little snow and moisture that we have comes in the winter and they get a small amount of winter grazing. In addition to that they are holding the lands in expectation of the time when either a cycle of high-rainfall years comes along, like we had when the land was first settled, or irrigation will enable them, the big wheat growers of that country, to immediately put that land under cultivation.

Mr. RAKER. Now, the experience has been on many irrigation projects up to the present time that some of these large holders did not come under the project, and that has hampered the project; also the land that they have sold has been sold at enormous prices, much more than the cost of irrigation.

Mr. ADAMS. Yes, sir.

Mr. RAKER. You recognize that fact?

Mr. ADAMS. Yes, sir.

Mr. RAKER. Now what effort have you people made to avoid that same condition under this proposed project?

Mr. ADAMS. We anticipated that, and two years ago we had proposed to the people of the State of Washington, through the legislature, a constitutional amendment giving the State the power of condemnation as far as irrigated lands are concerned. We have determined through appraisals the values of this land in its raw state. It is the purpose of the State to discourage sales at excessive prices before water is made available. We can condemn at present raw-land prices.

Mr. LEATHERWOOD. Has that act been passed upon by your court of last resort?

Mr. ADAMS. That was a constitutional amendment adopted by the people of the State of Washington. It is now a part of our State constitution, and has been passed upon by our State supreme court.

Mr. RAKER. Suppose a man has a 1,000 acres under the project, the contemplated project, and eventually it becomes a reality, that the money is appropriated and the dams and ditches and canals are built and the water is brought down on to the land. In the meantime he has not disposed of his land. That land, while it was only worth \$2.50 an acre without water, is to-day worth \$250 an acre. Now tell the committee what arrangements you have made to adjust that difference and dispose of the man's 960 acres so that he may retain 40 acres, if any.

Mr. ADAMS. I will be very glad to do that. In the first place we have come in contact through correspondence or by personal conversation with many of these owners whose tracts are greater than 360 acres—some 640 acres, and in some cases even a whole township—and they have reached the conclusion and have agreed with us that if this area can be watered by the United States Government they are willing in most instances to dispose of their excess holdings above the 40-acre unit.

Mr. HUDSPETH. At what price? Have they agreed upon a price?

Mr. ADAMS. I will answer that in this way: An appraisal has been made showing the value of raw land fit for sheep pasture at \$3 to \$5 per acre. It is a fair valuation at the present time. Fair-class wheat land on which crops have been grown is valued now at about \$10 or \$15 per acre. There are a few sections in the project, such as Rattlesnake Flats and Quincy Valley, that have a slightly greater average rainfall. Some of that wheat land is valued at from \$20 to \$25 per acre. It is our object to see that, as far as the settler is concerned, he shall pay no more than those going prices when he buys his 40 acres.

Mr. RAKER. But how can you carry that intention out?

Mr. ADAMS. We can carry that intention out in this way: If this becomes a Federal project the land owners would be compelled to enter into a contract with the Secretary of the Interior agreeing to the disposal of all excess areas over their 40-acre unit.

Mr. BARBOUR. Suppose he refuses to enter into that contract?

Mr. ADAMS. Then we would use the State power to condemn that land under our constitutional amendment.

Mr. BARBOUR. And take title to the State?

Mr. ADAMS. Take title in the State and turn it over to the Secretary of the Interior for his disposal.

Mr. BARBOUR. Suppose they contested those condemnation proceedings, it might take some considerable time to dispose of that matter if there were any considerable number of cases.

Mr. ADAMS. Yes, if there were any considerable number of cases. But as I say, from our correspondence and from our personal contact with these large owners we do not anticipate such a condition. We believe firmly that we will not have that condition to meet in very many cases.

Mr. RAKER. But no binding contract has been entered into yet?

Mr. ADAMS. None at this time, because we have not formed a district. There are several things to be done to perfect that.

Mr. RAKER. I know, but what I am so intent on, you are making the same argument that I heard 25 years ago, but I saw and realized that they could never carry it out, and these men paid \$150 and \$200 an acre for some of this land, just to get the land, and then had to pay for the water right, because arrangements were not made in the first instance to bind them to the contract.

Mr. ADAMS. That is just the reason I said we contemplated that situation and have passed this constitutional amendment. We have had these conversations and tentative agreements through correspondence with these large landowners.

Mr. RAKER. And your supreme court has held that you can condemn a man's thousand acres, leaving him 100 acres—well, say 40 acres—for the purpose of the State simply taking the 960 acres to sell to other private individuals?

Mr. ADAMS. Certainly. The State is now doing that.

Mr. RAKER. And your supreme court held that to be constitutional?

Mr. ADAMS. Yes.

Mr. RAKER. Is there any opinion by the Supreme Court of the United States on that?

Mr. ADAMS. Not that I know of, not the United States Supreme Court, but our State supreme court. And the State of Washington is now, through its department of conservation—

Mr. RAKER (interposing). Will you submit that decision so that it can go into the record with your testimony?

Mr. ADAMS. Yes, sir.

Mr. LITTLE. Have you got a pretty strong court out there?

Mr. ADAMS. We think we have.

Mr. LITTLE. You always have had?

Mr. ADAMS. Yes, sir.

Mr. RAKER. That seems so remarkable to me, that you can condemn property of private individuals by the State, not for Government use but to turn right over to another private individual.

Mr. BARBOUR. Simply because he won't enter into a particular contract.

Mr. ADAMS. Yes, sir; because we realize that that is for the benefit of the whole State, because if these tracts continue to be held in 1,000-acre units, as you say, it is not for the best interests of the State or the community at large that such areas be held, especially when these irrigable lands are now reverting to the desert instead of being developed.

Mr. SINNOTT. Are you familiar with the court procedure in that condemnation? Can you make a number of defendants, a number of landowners, party to one case?

Mr. ADAMS. Yes, sir; under our procedure. If we created a district, we could bring every member of that district into court under one proceeding.

Mr. SINNOTT. You would just have the one action?

Mr. ADAMS. One action; yes, sir.

Mr. SINNOTT. Now, can you take into consideration as a measure of damages the possible use to which the land is going to be put?

Mr. ADAMS. The way the State is operating in those cases is by taking the raw land at the present time and not as it will be in the future, because the settler is expected to derive the profit from it by his own labor and investment.

Mr. WEBSTER. May I interrupt just a minute? The same principle, Mr. Sinnott, would apply as applies in the ordinary condemnation case. For instance, where a railroad is condemning land, its value would be determined upon its value for its highest possible use, but you would not take into consideration its value when it became railroad land. So here you would value the land by its highest possible use in its then state, but you would not take into consideration its value under its improved or irrigated state.

Mr. HUDSPETH. Was Judge Webster on that court when that decision was rendered? [Laughter.]

Mr. ADAMS. Unfortunately not, but I think he would have concurred if he had been.

Mr. LITTLE. You were giving us some information about the dams on the Nile—

The CHAIRMAN (interposing). Excuse me a minute, I want to make an inquiry in connection with this matter. If this project is authorized by Congress, undoubtedly a provision will be inserted such as we have in section 3 of the bill 10614, that before construction of the project is commenced, the size of the farms therein shall be established and an agreement shall be made effective subjecting not less than 80 per cent of the excess lands within the project to disposal by authority of the Secretary of the Interior to settlers at prices and terms fixed in advance in such agreement.

Mr. RAKER. But, Mr. Chairman, have you overlooked the fact that these folks here now are seeking authority for the purpose of obtaining an appropriation to survey their project, and all of these conditions exist that have not been disposed of?

Mr. HAYDEN. How could all the conditions be disposed of?

Mr. SUMMERS. This is only a preliminary investigation, Judge Raker.

Mr. ADAMS. This is a preliminary investigation, Judge Raker, to determine and fill in the gaps that General Goethals and Mr. Goodner told you about yesterday. The investigations we have made are also preliminary, looking as we must to the ultimate construction and completion of this project. These problems, as nearly as possible, must be solved in advance. That is the reason we have gone into them so fully.

Mr. SUMMERS. May I read an extract from a letter that I think throws considerable light just at this point on several questions that have been asked in regard to conditions there? I want to say that these two letters came not in connection with this but from a desire to secure seed wheat, and are simply telling me their conditions. One writes:

"I will state my own condition, which is, I believe, that of the average farmer here. I came here 16 years ago, at the time this country was being opened up for grain raising. I went through all the hardships which go with a new country. Land is cheap here, as it always has been. We have not had a land boom in which values were inflated. There was a small increase in land values during the war, owing to higher grain prices, at which time some half dozen farms changed hands, and I mention this fact to show that most of us are the original settlers.

"During the last five years we have been passing through a series of dry years, which together with the price deflation has wiped away the savings of a lifetime for most of us, as well as the work of the last 15 years here.

"My taxes are years behind, also my interest. I have used up my local credit. My present crop, which will average about 4 bushels to the acre of wheat, will all go, as soon as I thrash, for obligations. I do not know at the present time how I can finance myself during the coming year and stay on the ranch."

The CHAIRMAN. From what section of the country is that letter?

Mr. SUMMERS. That is from the northern part of this project, right in the midst of it. One short sentence from another letter and then I will yield. This letter states:

"All of us would gladly sell part or all of our holdings to meet our obligations and put in another crop, but conditions are such that we can not sell anything for cash."

I think these letters answer several questions that have been raised.

Mr. RAKER. Now, the State of Washington has already spent \$150,000 on this project. They have surveyed and they have gone over the tract minutely. While they were doing all of that, as yet they have made no definite arrangements to protect incoming purchasers, and I am wondering why they did not obtain a contract from the landowner that if it was eventually put into a reclamation project he would dispose of all of his land except 40 acres.

Mr. ADAMS. Let me answer that in this way: Until this investigation is completed it would be presumptuous to create a district, which is ultimately the object, we think, of the United States Government and the State under our district laws. However, if the determination to be made by the Federal Government by this appropriation of \$100,000 shows that it is feasible in all its aspects, then we contemplate that the Government will say: "If you form the district we will have some legal basis on which to contract with your settlers." And until that is done we can only offer these suggestions and these preliminary negotiations to determine in advance what the sentiment of the settlers and those in the surrounding country may be.

Mr. BARBOUR. Right there, Mr. Adams, before you form your district, suppose some of those landowners refuse to join, would you then bring condemnation proceedings?

Mr. ADAMS. We would not until a district were formed. There would then be a legal entry through which the State could proceed.

Mr. BARBOUR. But suppose the landowners refused to join the district?

Mr. ADAMS. Then there would be no project. Under our State law 50 or more settlers on a project can petition the county commissioners for the formation of a district.

Mr. BARBOUR. That is similar to our law. That is what I had in mind.

Mr. ADAMS. Then they vote upon whether a district shall be formed or not.

The CHAIRMAN. What per cent of them?

Mr. ADAMS. Two-thirds. If two-thirds of the people within the district vote for the formation of the district, it becomes a legal entity and a public corporation.

Mr. BARBOUR. But if you do not get that two-thirds vote, then your district falls.

Mr. ADAMS. The district falls; yes.

Mr. BARBOUR. The whole project fails.

Mr. ADAMS. The whole project fails.

Mr. LEATHERWOOD. Now, under your condemnation proceedings in this class of cases provided by your State law, I take it from what you said that the title would vest in the State.

Mr. ADAMS. Yes; title would vest in the State.

Mr. LEATHERWOOD. The fee simple title?

Mr. ADAMS. Yes.

Mr. LEATHERWOOD. Then, under such an act or an act similar to that to which your attention has been called by the chairman—

Mr. ADAMS (interposing). The State would enter into a contract with the Secretary of the Interior giving him the power to dispose of lands subject to the contract with the district.

Mr. LEATHERWOOD. Make him the agent?

Mr. ADAMS. Make him the agent, through his department, for the disposal of these lands to ex-service men and others.

Mr. BARBOUR. Would the State convey that land to the Federal Government?

Mr. ADAMS. I believe it would, in trust at least.

Mr. LEATHERWOOD. For what consideration?

Mr. ADAMS. Well, that would be a matter of contract between the Secretary of the Interior and the State through its district organizations, and at the going prices, we presume, of lands as they would be appraised by the Secretary of the Interior.

Mr. RAKER. Mr. Adams, going a little farther with Mr. Barbour's question, after the district is formed, here is a man that refuses to divide his lands; the State commences this proceeding for the purpose of the State buying the land for final disposition of it, through condemnation proceedings.

Mr. ADAMS. Yes, sir.

Mr. RAKER. Now, what is that purpose for which the State can acquire that particular tract of land? Is there any particular designation under the Constitution?

Mr. ADAMS. To bring it within the district so that that land may be assessed and taxed to pay for the water upon the land and resale to the settler himself.

Mr. RAKER. That is not the question I asked you. If a majority, a two-thirds vote decides to go in, the one-third must come under the district under the law?

Mr. ADAMS. Yes, sir.

Mr. RAKER. Now, the question is as to the division of the tract of land from a 1,000-acre tract to a 40-acre tract.

Mr. ADAMS. Well, that is taken care of, as Mr. Smith called your attention to, under this provision.

Mr. RAKER. Oh, no; you are opening up quite a different view. The secretary will not act unless that is done, but the question I put now is after your district is formed, the land is in, legally in—because it must be that way—a certain minority can object, but the majority or two-thirds or three-fourths can put you in the district.

Mr. ADAMS. Yes, sir.

Mr. RAKER. Now, this man who has objected has got 1,000 acres, and you want to reduce him to 40 acres; do you say you can commence proceedings in the State court and take 960 acres from him by the State?

Mr. ADAMS. Yes, sir.

Mr. RAKER. For what purpose?

Mr. ADAMS. For the purpose of permitting him to hold only 40 acres of land and dispose of the balance to the subsequent settlers who desire that land, through the Secretary of the Interior.

Mr. RAKER. In other words, you can go out and say: "Here, Mr. Brown, you have got a fine piece of land; you are a good farmer; you are doing well, but Mr. Jones, a red-headed farmer over here, is a little lazy and trifling but we like him and we will commence condemnation proceedings to take your land from you and give it to Jones, the red-headed fellow." Is that right?

Mr. ADAMS. I think, with the exception of drawing the distinction between the red-headed man and the original owner, that is about correct.

Mr. LITTLE. Don't you think that in order to reach a legal conclusion on which we could work on these things we would have to take your law books and read them over, or are you satisfied that this is an authentic opinion?

Mr. ADAMS. I know that our State supreme court has upheld that act, and I will be glad to submit their decision.

Mr. HAYDEN. You have actually had cases where you brought a man into court who refused to include his lands within an irrigation project; you have condemned the land, taken it away from him, and sold it to other people, and all that has been approved by your State supreme court?

Mr. SINNOTT. You can put in the decision in the case.

Mr. GOODNER. The supreme court decision in our State which passed upon the powers of our reclamation department, division of reclamation, hinges the whole constitutionality of our act upon one clause, that was for the purpose of developing the lands. They have held that as long as we take these lands for the purpose of increasing the development upon them, lands which are now idle, and put them into any form of agricultural development, that that is within the power of the State; that the constitutional amendment contemplated that very thing. We could not take your land away from you and allow it to lie idle nor put it to some other use than agricultural development.

Mr. RAKER. Now, this question, so that we may understand it—and I am not going to take too much time—suppose a man has 160 acres under a project like this. It is under cultivation. A district is formed. The man is an objector, but under the district he could only hold 40 acres.

Mr. GOODNER. Your premise can not be met in our State. That premise could not obtain, because the land could not be under cultivation in advance of splitting up into these units, because we would not build the project. The project would not be authorized nor built until after this splitting up of ownership had been accomplished.

Mr. BARBOUR. Suppose you had a tract actually under development within a contemplated project, say, a tract of 100 acres, then that man would have to give up all but 40 acres?

Mr. GOODNER. There isn't any such thing in that country. Any lands that are already supplied with water within a proposed project would be entitled to exclusion from the district, because they have their own water supply.

Mr. BARBOUR. Even though they were right inside of the exterior boundaries of the district?

Mr. GOODNER. Yes; we have that condition in administering the State districts, that I told you about yesterday. We have 20 or more districts now that are operating in that way. Within some of them there are individual tracts that have their own wells or springs or riparian rights and do not get the district service, and while they are entirely geographically within the district they are politically not part of the district at all.

Mr. BARBOUR. And would not be included in it?

Mr. GOODNER. And would not be included in it.

Mr. BARBOUR. Your constitutional amendment is also directed at the large land holder outside of the irrigation districts, is it not, and is for the purpose of breaking up some of those large holdings?

Mr. GOODNER. It covers irrigation districts or drainage work only; any reclamation work. It must be aimed at reclaiming land; we can not exercise that power for any other purpose.

Mr. BARBOUR. But a man holding a tract of, say, 100,000 acres outside of a project, you could not proceed against him?

Mr. GOODNER. Not unless we contemplate development of the tract.

Mr. SINNOTT. Will you put that act into the record, and also the decision of the Supreme Court?

Mr. GOODNER. Yes, sir.

Mr. BARBOUR. That constitutional amendment?

Mr. GOODNER. Yes, sir.

Mr. LEATHERWOOD. It would seem, then, that this proceeding in your supreme court would act as an entering wedge in operative socialism.

Mr. GOODNER. Perhaps so; and so are all irrigation projects.

Mr. HAYDEN. It may shock some of the legal minds around this table, but I think the State of Washington should be complimented on the adoption of that constitutional amendment. It may be contrary to all the precedents, but it is apparently a good means to attain a most desirable end.

Mr. BARBOUR. I think it should go further and apply to all large holdings.

Mr. SINNOTT. Mr. Adams, you said that the State could take idle lands. Is that the only kind of land that they could take? Would this land be considered idle?

Now, here is 160 acres in the exterior boundaries of that project. It is not irrigated but is being cultivated by dry farming. Would you take that 160 acres under your condemnation?

Mr. ADAMS. Not unless it was to be irrigated.

Mr. GOODNER. Irrigation would increase the value of that land.

Mr. SINNOTT. You could take that 160 acres of land under dry farming for the purpose of irrigating it?

Mr. ADAMS. Yes, sir.

Mr. RAKER. Now, just one other question on that line.

When the State gets it, what is the plan in the disposition of that land to settlers; do they make a profit on it or turn it over at actual cost?

Mr. ADAMS. We try to discourage profiteering for this reason: If the man is compelled to pay, we will say, \$3 or \$5 or \$10 or \$25 an acre, and on top of that we put a water charge of \$144.99 or \$145, we think that is as much as the settler should be compelled to pay. With the amortization of his payments, any excess over the going value of the land works to the detriment of the settler and is also detrimental to the State.

Mr. LITTLE. There is one question I would like to ask. You gave us the information that the British Government advanced the money to build the Aswan Dam. Their Egyptian Government built the barrage below Cairo and near Cairo. There are three of those big dams on the Nile, and do you know who furnished the money for the third one at Assiut?

Mr. ADAMS. You mean the Aswan Dam?

Mr. LITTLE. No; you said the British built the Aswan Dam. Now I happen to know that the Egyptian Government built the barrage; who built that dam at Assiut?

Mr. ADAMS. I don't know.

Mr. GOODNER. The Agricultural Department and the Geological Survey here in this city have both issued bulletins covering Egyptian reclamation, as well as the reclamation in India. While it is true that the old Egyptian rulers started the barrage, they never successfully completed it. It was completed and the two dams, the Aswan and the Assiut, and the work was done and the work now going on is under the auspices of the British Government.

Mr. LITTLE. But the barrage was built by the Egyptian Government itself.

Mr. GOODNER. Yes, sir.

Mr. LITTLE. And the engineers were Italian first, then French, and then English, but the government built it itself.

Now, do I understand you to say that the Aswan Dam was built by the British Government's money?

Mr. GOODNER. Yes, sir; and also the Assiut. And the work which has gone on ever since has been direct from imperial funds advanced the same as this country would build a post office.

Mr. LITTLE. Do you mean to say that imperial funds maintain the Aswan and the Assiut Dams.

Mr. GOODNER. The water is rented each year and they are sustained in that way. They auction off the use of the water each year in Egypt on a rental basis, and that income is the only way that the Egyptian Government has of raising money for that purpose. The finances of the Egyptian Government have been guaranteed until quite recently and administered by England.

Mr. LITTLE. You get this information from these circulars, about the English Government building these dams?

Mr. GOODNER. From them and from the personal correspondence of Sir William Wilcocks, English administrator in charge of the work.

Mr. LITTLE. You have read of his work? If the British Government built the Assouan and Assiut Dams I would like to get the facts. The Banage was not so built and I do not understand that the others were.

Mr. GOODNER. I have had a great deal of detailed information from him on that work.

Mr. WILLIAMSON. Mr. Adams, I wonder whether or not, in pursuance of that constitutional provision the State has passed any law or is there any regulation by which the State agrees not to sell this land at a profit? In other words, turn it over to the settler at actual cost?

Mr. ADAMS. Yes, sir; the State has determined the price in advance of lands on projects. Not this particular one, but it has about twenty projects under the State-reclamation service and it has determined the going price of the land, and will take it over and redispense of it to ex-service men or others who desire it at that figure, without any additional enhancement of price.

Mr. WILLIAMSON. In other words, the aim of the State is to take these lands and turn them over to the settler at what they actually cost the State?

Mr. ADAMS. Yes, sir; that is the policy of the State.

Mr. BARBOUR. Would the cost of condemnation proceedings be included?

Mr. ADAMS. I presume that would be part of the cost, but that is a very small figure when you can combine all of these holders into one proceeding. The cost would be so small that it would not be appreciable.

Mr. BARBOUR. It would be very small per acre if they were all combined in one proceeding.

Mr. RAKER. Who is the Columbia River Basin Irrigation League?

Mr. ADAMS. The Columbia Basin Irrigation League is an organization of those interested in this development in the States of Oregon, Washington, and Idaho. They are all interested in this development because they realize that with the settlement of this project and the bringing in of half or three-quarters of a million people, the benefits will be distributed over the entire Pacific Northwest.

Mr. RAKER. And the development of commerce and the development of the country is a Government function of the State of Washington?

Mr. ADAMS. Yes; cooperating with the league.

Mr. RAKER. How much did this document cost you, this Columbia basin project?

Mr. ADAMS. What document are you referring to?

Mr. RAKER. This report of George W. Goethals & Co.

Mr. ADAMS. I can show by that the way the State and the league cooperate. The legislature made an appropriation of \$50,000, a great part of which was spent on drilling the dam site at Grand Coulee. When that fund was exhausted, or almost exhausted, it was realized that we should have an engineer of outstanding reputation to go over the project and make an independent study of it; therefore the State put in all of its remaining available fund granted by the legislature and the citizens of the Pacific Northwest made up the balance by private contribution in order to take care of the small deficit necessary to get this report out.

Mr. LEATHERWOOD. If Congress should appropriate the moneys called for in this bill, that could be expended, as I understand it, by the Reclamation Service?

Mr. ADAMS. Yes, sir; by the Secretary of the Interior.

Mr. LEATHERWOOD. I do not recall, but do they have the power of going outside of their force and employing engineers?

Mr. ADAMS. I presume so.

Mr. HAYDEN. Yes, they employ engineers.

Mr. ADAMS. They employ consulting engineers.

Mr. LEATHERWOOD. It is contemplated that General Goethals will be retained in the further development of this project?

Mr. ADAMS. We can not anticipate that. That is entirely a matter for the Secretary of the Interior to decide.

Mr. SUMMERS. Mr. Adams, I had a conversation recently with the Secretary of the Interior during which he stated that his idea at this time would be to send an investigating committee of three. He would call on the Agriculture Department for a soil expert; he would call on the Geological Survey for a geologist, and he would call on the Reclamation Service for an engineer; and he thought that would be a proper committee to make the investigation contemplated in this bill.

Mr. LEATHERWOOD. That sounds very sensible.

Mr. SUMMERS. It did to me.

Mr. HUDSPETH. Have you had sufficient communication, Mr. Adams, with these property owners in that district that you would be justified in saying to the committee at this time that in your opinion two-thirds of them would vote to go into that district?

Mr. ADAMS. I think it would be almost unanimous.

Mr. SUMMER. I think the letter that I read into the record throws some light on that.

Mr. ADAMS. I can say that confidently for this reason: This area is becoming rapidly depopulated; the people there are thinking and dreaming of nothing but bringing water upon that land. It is their only hope of salvation. They are so intensely interested in it that I do not believe there is a settler on the project at the present time who would vote against it.

Mr. HUDSPETH. A settler or an owner?

Mr. ADAMS. A settler or an owner. I think the vote would be unanimous.

Mr. RAKER. Why has the State not made further appropriations and gone ahead and completed the project?

Mr. ADAMS. I think it only fair to say that the State having made an appropriation of \$150,000 up to the present time, almost unprecedented so far as States are concerned, has already gone a long way.

Mr. RAKER. I thought you said the State appropriated \$50,000.

Mr. ADAMS. The \$50,000 that I spoke of was the second appropriation. The first appropriation was \$100,000, which was exhausted. The State then made a further appropriation of \$50,000.

Mr. RAKER. Then, the State has appropriated \$150,000 altogether?

Mr. ADAMS. The State has appropriated \$150,000, and we have had access to records of railroads and counties, etc.

Mr. RAKER. I know, but just the cash was what I was asking for. Now, why has not the State appropriated more and gone ahead?

Mr. ADAMS. The State appropriation made at the last biennium has only recently been exhausted. Our legislature does not meet until January.

Mr. RAKER. Of this next year?

Mr. ADAMS. Of this next year, yes; and having made this appropriation of \$150,000 for preliminary investigations, I believe the State thinks at this time—or I think it is reasonable for it to think—that the project should now be placed in the hands of the Federal Government.

Mr. RAKER. Supposing that is done, what would you do with reference to reimbursing the Federal Government for the money it has appropriated?

Mr. ADAMS. As I take it, as far as reimbursing the Federal Government for the money appropriated is concerned, it would be the policy of the Reclamation Service, if it pursued the policy that it has adopted, that this \$100,000 would be ultimately reimbursable to the Government as part of its expenditure and repaid by the land holder.

Mr. RAKER. Provided it was consummated, but suppose it was not consummated, then what? Supposing the report is adverse, what is the Government going to do about the money appropriated?

Mr. HAYDEN. Would the Government not do just as it does in every other case where it spends money and does not accomplish anything—the money would be lost?

Mr. GOODWIN. It would do what the State did with the \$150,000 they put in.

Mr. RAKER. Oh, that is a different thing.

The CHAIRMAN. The State or local communities are to bear half of the expense of the investigation and the suggestion you offer would be unusual and unprecedented.

Mr. RAKER. But I was asking the witness a plain question so that anybody who reads the record might know exactly where we stand. We have nothing to cover up.

Mr. HUDSPETH. The people of Texas have continuously put up money for investigations down there.

The CHAIRMAN. But the Federal Government has also put up money for them.

Mr. HUDSPETH. I don't think the Federal Government ever put up a dollar in my State.

The CHAIRMAN. The answer is so easy that I am surprised that you would ask the question. The Government loses the money; that is all.

Mr. RAKER. Then come out and say so.

Mr. ADAMS. That is what I wanted to say. There would be a loss of \$100,000 upon the part of the Government.

Mr. RAKER. And on what theory do you base the argument that the Government should run the risk of losing \$100,000?

Mr. ADAMS. On the theory that this is a great national asset; that the Government can well afford to put in \$100,000 to complete this investigation, because it will mean to the United States Government alone very great returns, not only in the prosperity of its people but the return in income taxes would soon pay for the cost of this project if it is built by the United States.

Mr. RAKER. Now, the general estimate of cost is now fixed at about what?

Mr. ADAMS. The total cost will be about \$254,000,000.

Mr. SINNOTT. What did we appropriate for the investigation of the Imperial Valley in California?

Mr. RAKER. \$20,000.

Mr. SINNOTT. What is the status of that?

Mr. RAKER. It is before the committee now.

The CHAIRMAN. What is the prospect of getting back the \$20,000.

Mr. RAKER. You can get it all back by applying that canal project, if you want to.

Mr. BARBOUR. The Government in the Imperial Valley owns a very large amount of land that would be affected by the improvement there.

Mr. SINNOTT. This would not be any different from the Imperial Valley.

Mr. RAKER. None whatever, but this witness appears to be, and I am satisfied from my own observation that he is, an intelligent witness, that he knows what he is talking about and he is not afraid to tell you that if you appropriate the money and it turns out to be a failure, the Government loses, but the Government can well afford to lose it for the purpose of making the investigation. That is what I am trying to develop if it is a fact.

Mr. ADAMS. That is a very good answer.

Mr. RAKER. Now the \$254,000,000, how do you expect to get that?

Mr. ADAMS. You mean how it would be reimbursed to the Government?

Mr. RAKER. No; how do you expect to get it in the first instance.

Mr. ADAMS. By a loan of the credit of the Government until the settlers could repay the money.

Mr. RAKER. By direct appropriation?

Mr. ADAMS. Yes, sir.

Mr. RAKER. And how as to the interest pending the time it shall be repaid.

Mr. ADAMS. It is our belief that the policy of the Government should be—of course we can only offer the suggestion—that because of the benefit to the Nation it can well afford to lend its credit over a period of 40 years without interest.

Mr. RAKER. What is your idea now, supposing within the next year surveys are made and reports are made that show that the project is feasible and would justify the construction because of the benefits it would be to the land in enhanced value, even if it cost \$254,000,000—what is your idea as to how long it would take to construct the work so that it would become useful to the land?

Mr. ADAMS. Six years.

Mr. RAKER. Then within six years repayment could begin to be made?

Mr. ADAMS. I doubt that, because in justice to the settler he should be given at least two or three years to get his land in shape before he would be asked to make or to begin making returns to the Federal Government.

On these irrigation projects you can not turn the water right on and grow a crop at once.

Mr. RAKER. One other question and I am through. Supposing in this project a man has 1,000 acres; the unit is 40 acres, and under your law you can condemn, say, 960 acres. Suppose he has two or three growing boys who are very near of age, and a couple of daughters—he has a family of five or six—is it your purpose or the purpose of the State to take all of that land from that man if these children are under age, so that he may not be able to within two or three or four or five years turn 40 acres to this boy and 40 acres to this girl when she gets married, and 40 to the other boy? Have you got any policy of that kind determined?

Mr. ADAMS. I do not think that would be necessary, because under the laws of our State, or any other State, the father could readily make a conveyance to any of these minor children. That will protect their interests.

Mr. RAKER. That can be done now under the reclamation project?

Mr. ADAMS. Yes, I think that is true.

Mr. GOODNER. We are doing that now. In the present administration of the other districts, if a man shows that he has got a legitimate use for the extra land, he is permitted to withhold that land. We are not making any attempt at all to take land away from a family where a family shows capability of handling it. That is actually going on to-day upon thousands and thousands of acres where the State has control in that way.

Mr. RAKER. That is very fine.

Mr. GOODNER. That is our established policy.

Mr. ADAMS. It would be a mistaken policy not to do it, because those are just the kind of people we want to remain on the land. Those are the kind of settlers that we are looking for, who are contented and want to live there.

Mr. RAKER. Well, it is very well to let the public know so that if a man goes in there with his family he has got prospects for his boys and girls who want to build up the country.

Mr. ADAMS. I will say as a general principle that it is the policy of the State to look to the settler himself. He is the primary individual that everybody should look to, and whose happiness should be considered above everything else.

Mr. HAYDEN. That meets the objection which I made yesterday to the small size of the farm unit. If you limit the farm unit to 40 acres to a family and that is all the land that the entire family may obtain, it is too small. But if you allow a man to obtain 40 acres for himself and 40 for his wife, and then if they have a boy coming of age who can properly cultivate it, allow a unit for him, that makes a very different situation. When the time comes to divide 40 acres among the members of a family, each child may receive only 5 or 10 acres which is such a small unit that they can not make a living on it.

Mr. ADAMS. You have got to allow for expansion, that is true, and I think any other policy would be detrimental to the development of the country.

Mr. WEBSTER. And your idea is, that that is the settled policy of the State now and that they are carrying it out every day?

Mr. ADAMS. Yes.

Mr. RAKER. I did not know that and I wanted it to go into the record so there would be no question about it.

Mr. LEATHERWOOD. What is the test, Judge Webster, as to the beneficial use? Theoretically I am heartily in favor of that, but how are you going to prevent, under your State law, the very thing happening that frequently has happened with reference to acquiring coal land? Suppose I owned a large tract of this land in question, 2,000 acres; is there anything to prevent me from conveying that to John Jones and Sam Smith, who have large families, and then having them divide among their children, and then later all of it drifting back again to a common ownership?

Mr. WEBSTER. Well, you see you have a different element here, Mr. Leatherwood. The whole theory upon which the power of the State rests to condemn this land is that the State proposes to take the land and develop it and put it in a more useful and more valuable condition than it was, a thing in which all of the people are interested. Now as long as that is being done and the development is being kept within units that are practical, you are changing the condition of that thing all the while. You take the coal lands that you speak of, the Government is not doing anything with them; it does not expect to do anything with them; the coal is there and it is a proposition of taking it out. Here the State government acquires the title to the land for the purpose of changing its condition and status elevating it to a higher usefulness, a thing in which all the State is interested and upon which the State exercises its power of eminent domain. Now having the power to do that, the State has the power to do the things that are incidental to making that effective, one of which is to keep it in units of such size as to make its development practical.

Mr. LEATHERWOOD. The only analogy in the illustration was the getting back to common ownership, as to what test you have to prevent a man with a large tract making simply as a matter of form, conveyance with either a secret understanding or otherwise, and then after a certain period it comes back.

Mr. WEBSTER. The test would be: Are you developing that land and putting it into a higher state of usefulness than it was before? The State would not be concerned in the question of whether I or my son owned 80 acres of land, if both I and my son were developing that land and putting it into a higher state of usefulness from which the public derives the benefit.

Mr. HAYDEN. There is one further means of control that exists on an irrigation project that could not exist with respect to coal land. I refer to the absolute control over the delivery of water. A regulation could very properly be imposed that water would not be served to land in one ownership greater than the farm unit.

Mr. WEBSTER. Of course that is fundamental in all these projects, you have that power of regulation and control incident to your power to control the supply of water itself.

Mr. GOODNER. There is one more clause that runs with that. In the contracts which the State is now making on the other projects, and I assume it will apply to this, we make a written agreement with each of these owners whose land we take over. That agreement provides that the option in the State runs with the land through successive ownership until in the judgment of the department of conservation and development the land has reached a stage of development under which we may cancel that control. You can transfer it through 70 different hands, but if none of them develop it, our control holds.

Mr. RAKER. Will you kindly insert a copy of that contract in the record?

Mr. GOODNER. I will get one.

Mr. RAKER. It just seems to me that the farmer hasn't any chance on God's earth to determine whether or not he has got sense enough to run his farm. It may be a good thing, but I don't know.

Mr. GOODNER. Just the minute that he makes wheat come up out of that ground the farm is his to do with as he pleases; if he doesn't make it come up, we think we have a right to assist him to make it come up.

Mr. RAKER. I believe in helping him, but I just made that statement off hand. Now, what is your idea as to the advisability of this legislation for this project in particular, and the further idea of making this bill general, authorizing the appropriation of \$500,000 or \$1,000,000, and giving the Reclamation Service the power to make these investigations under certain conditions so that we can really get general development in the West? What is your idea as to that?

Mr. ADAMS. That is the policy of this bill. This \$100,000 appropriation is to be made for the benefit of the investigation through the Secretary of the Interior himself.

Mr. RAKER. You don't quite get me. This is a specific project. Every community and every locality almost is demanding just what you people are asking. They have been demanding it for 10 or 15 years. How can the other members justify one particular project by special vote when it ought to be a policy of the Government to authorize such investigations as in the judgment of the Reclamation Service are proper?

Mr. ADAMS. Well, I will answer that in two ways. First, I think the Secretary of the Interior himself has designated in his communication to you that he thinks this investigation should be made. Now, that, as far as the Government is concerned, evidently lays down the policy of the Secretary of the Interior as to these investigations.

Second, that this project is so large, comparatively speaking, that, as Mr. Goodwin outlined to you yesterday, it becomes one of three great proposed developments in the West—the development of Alaska, the development of the Colorado Basin, and the development of the Columbia Basin.

Now, because those do take on a national aspect and national importance, and incidentally, of course, are of great local importance, it is therefore a problem for the National Government rather than for a local government or a community.

Mr. LEATHERWOOD. Does the number of acres, in your judgment, determine whether a question is national or not in a proposition of this kind?

Mr. ADAMS. Not wholly the number of acres. But I would say that this whole plan of development is necessarily a Government project rather than a State project, because of the water rights involved, because of the tremendous area, and because of the benefits to the entire United States through the ultimate development of the project.

Mr. RAKER. Mr. Bien says he would like to answer that question.

Mr. BIEN. I simply want to call attention to the fact that some years ago, or a number of years ago, Congress appropriated \$50,000 for secondary investigation. We have tried to get more because that was not enough. For the last two or three years the appropriation has been \$100,000, and we used that for general investigations. We have a great many more demands than we can possibly comply with, so we would not object if you could have that increased.

Mr. HAYDEN. I might make a further suggestion that such an appropriation is not unprecedented, in that \$20,000 was appropriated by Congress for investigation of the lower Colorado River in cooperation with the Imperial irrigation district, and that the last annual appropriation bill for the Interior Department carried an appropriation of \$100,000 for investigations on the Colorado River.

Mr. RAKER. Well, the only point I made was not an objection, either fundamental or specific; but there is such a demand by so many of the western communities that feel that they are situated just like these gentlemen say they are, that it is a governmental function and one of the great things that is necessary to develop the West, like the Columbia River, the Colorado River, and other projects which are not quite so large.

Mr. BARBOUR. Could this project be carried through under the Smith-McNary bill if it was enacted into law?

Mr. ADAMS. Because of its cost I think that it would be rather doubtful whether it could be carried through under the Smith-McNary bill. However, if the fund provided in the Smith-McNary bill revolves as some of its supporters believe it will revolve, ultimately it might be built under that. It will be long years in the future, however.

Mr. BARBOUR. As I understand it, the Smith-McNary bill authorizes an appropriation of \$350,000,000.

Mr. ADAMS. Yes.

Mr. BARBOUR. Now the thought occurred to me that if we attempt to pass special legislation applying only to this project, it might to a certain extent jeopardize the possibility of passing the Smith-McNary bill.

Mr. ADAMS. I think it would aid greatly the passage of the Smith-McNary bill, and our people of the Pacific Northwest believe so.

The question now as to the \$100,000. Let me answer that first. Even under the Smith-McNary bill you could not proceed with this project until this investigation had been made, and therefore we are asking for this \$100,000 in order that whatever plan may be adopted by the Government in the future, this project at least will be in shape to take advantage of any opportunity.

Mr. BARBOUR. Assuming that the investigation demonstrates that it is a feasible project, could it then be brought in under the Smith-McNary bill, if that bill has become a law in the meantime?

Mr. ADAMS. Under its revolving feature, perhaps a long time in the future that would be the case, but because of its size and the intense desire of the people of the Pacific Northwest—they hope, at least, that this project can go forward independently.

Mr. BARBOUR. Is it at all possible to carry through this project as a private project?

Mr. ADAMS. No; that is entirely out of the question.

Mr. SINNOTT. Judge Raker, your question could be answered by the legal maxim, "Lex vigilantis non dormientibus." [Laughter.]

Mr. RAKER. That does not apply to any particular case or any of the Members from the West or any of those on this committee, because these matters are pending and have been held in abeyance because there should be some general policy established.

Mr. HAYDEN. That is not the answer, Judge. The answer is that it is a question of fact for the jury.

Mr. RAKER. No; that answers the question. Now, the department has spent some money; the State of California has spent some money for the purpose of irrigating about 6,000,000 acres of land at a cost of \$150,000,000, and we are held up from future and proper examination which would bring in 10 people as compared to 1 on any other project in the United States, but the amount is so large that they have not even had a chance to consider it. So the question involved is whether or not we are going to be tied up on all of our reclamation business if we start out on separate projects instead of giving to the Reclamation Service the opportunity to judge what ought to be done. I want you to think about that.

Mr. ADAMS. That is what we are doing right here. We are asking the Interior Department to make this investigation.

Mr. RAKER. Now, I will be plain about this. We want the support of you and everybody else to put enough money into the reclamation fund so that these people can do the legitimate work that ought to be done.

Mr. ADAMS. We agree with you, and we have been among the strongest supporters of the Smith-McNary bill.

Mr. RAKER. I know you have.

Mr. LEATHERWOOD. Do you mean to say in addition to that, other work should be done, too?

Mr. RAKER. That is what I am getting at. We want the support of these people and others from the West; we want them to get the help of their eastern friends so that we can get enough money into the reclamation fund so that the reclamation people can do the legitimate work that now needs doing.

Mr. LEATHERWOOD. What we want, what the dry State fellows want, is more spread.

Mr. RAKER. Yes.

Mr. ADAMS. Well, we will go down the line with you 100 per cent on that policy.

Mr. HAYDEN. I want to ask some questions about the text of this bill, because it is now noon and the committee will have to adjourn very soon.

The bill provides, to begin with, that this investigation shall be completed not later than the first day of January, 1924. Can it be done within that time?

Mr. ADAMS. I think it can be done within that time.

Mr. HAYDEN. Then, the bill on page 2 directs in detail just what kind of report shall be made.

Mr. ADAMS. Yes.

Mr. HAYDEN. Would you not get along just as well with a very short act appropriating \$100,000 for an investigation of this project, and let the Reclamation Service make the investigation and submit a report of what it found?

Mr. ADAMS. That would probably be very advantageous except for this reason, that the Senate has already passed this bill and if we attempt to amend it at this short session we might meet with serious difficulties.

The CHAIRMAN. The Members of the House are not informed as to just what we expect to accomplish.

Mr. HAYDEN. Sometimes I find that as a practical matter the more you go into details the more likely you are to raise doubts in the minds of those that are not familiar with the subject. It takes just that much longer to answer their objections. After all, if the bill provided that \$100,000 was to be furnished to the Reclamation Service to investigate the Columbia Basin project, and stopped right there, you would get every result that you will obtain by this longer bill. When you particularize if you happen to forget anything, then you will fail to get a report on that feature. In other words, is it not better to pass general legislation with broad powers and then let the Reclamation Service go on and make the investigation?

Mr. ADAMS. The Secretary of the Interior has gone over this bill very carefully. We agree with him on the matter, and it has been drawn at his suggestion.

Mr. SINNOTT. I want to ask one more question. You stated that you would irrigate approximately 2,000,000 acres by the gravity system and your secondary pumping?

Mr. ADAMS. Yes, sir.

Mr. SINNOTT. Now, what do you estimate will be the cost per acre?

Mr. ADAMS. To be exact, \$144.99.

Mr. SINNOTT. That includes secondary pumping?

Mr. ADAMS. No; just gravity.

Mr. SINNOTT. How much more will it cost for secondary pumping?

Mr. ADAMS. That has not been figured by the engineers and will be one of the things perhaps that this \$100,000 will be used for, to make the determination.

Mr. WEBSTER. But the land to be reclaimed, Mr. Sinnott, is 1,753,000 acres by gravity alone. Whatever the additional cost of pumping would be, would be to bring under reclamation additional acres.

Mr. ADAMS. And perhaps with the additional acreage it will probably mean a decrease in the ultimate per acre cost rather than an increase.

Mr. SUMMERS. I think it should be borne in mind that the \$144.99 is estimated to carry a ditch to each 40-acre tract, whereas if we only undertake to carry it to larger subdivisions the cost would be very much less.

Mr. RAKER. Let me ask you this question—and I would like to have the attention of the chairman—I want to ask this question of the witness and I would like to have the chairman answer it: Under the present law the Committee on the Budget and the Appropriations Committee would have the power instead of making this a secondary project appropriation of \$100,000 to make it \$500,000 if they so wished. Is that right, Mr. Chairman?

The CHAIRMAN. Undoubtedly.

Mr. SINNOTT. No.

The CHAIRMAN. But the unfortunate thing about that is that it will come out of the reclamation fund. We do not want to load down the reclamation fund.

Mr. SINNOTT. You were not talking about the reclamation fund?

Mr. RAKER. No.

Mr. SINNOTT. This is limited by the \$100,000.

Mr. RAKER. But I meant as the law now stands, the Committee on Appropriations, has the law or the power to make any appropriation as to amount that they see fit for secondary projects. Is that correct?

The CHAIRMAN. Undoubtedly.

Mr. SINNOTT. No.

The CHAIRMAN. Why not?

Mr. SINNOTT. He is talking about money coming out of the Treasury; he is not talking about money out of the reclamation fund.

The CHAIRMAN. Appropriations for secondary projects come out of the reclamation fund; we want this to come out of the Treasury.

Mr. SINNOTT. Well, here it is, Judge: Supposing the Appropriations Committee would bring in an item of \$100,000 or \$500,000 to be paid from the United States Treasury for investigation purposes; somebody would make a point of order that there is no law authorizing that.

Mr. RAKER. That is just the point. They have already in each bill for the last three years brought in \$100,000.

Mr. SINNOTT. But that is out of the reclamation fund; this is out of the Treasury.

Mr. RAKER. That is what I wanted straight. They have the power now to make the appropriation of any sum they want to, provided it comes out of the reclamation fund.

Mr. SINNOTT. That is correct.

Mr. RAKER. And that is the way you understand it, Mr. Bien?

Mr. BIEN. It would reduce accordingly the amount available for construction.

Mr. RAKER. But it comes out of the reclamation fund?

Mr. BIEN. Yes, sir.

Mr. RAKER. Now, it has power to make appropriation for this out of the general fund in the Treasury; we do have a general authorization of law for that purpose.

The CHAIRMAN. From this committee, yes.

Mr. RAKER. Not necessarily, because the Committee on Appropriations can report any sort of an appropriation it wishes, but if we pass this sort of a bill it will, in my opinion, make it easier for them to justify this appropriation.

Mr. SINNOTT. They can put an item in, but it would be subject to a point of order.

Mr. RAKER. What I meant was, it would not be subject to a point of order.

Mr. WEBSTER. Mr. Chairman, shedding a little more light on the question asked by Mr. Hayden as to whether this report could be made by January 1, 1924, when Director Davis was before the Senate committee in connection with this same bill, that matter was called to his attention, and on page 8 of the Senate hearing Senator Jones asked:

"Why not make this July 1, 1923?"

Director Davis answered: "That would be right in the middle of the season, if any field work were being done. January 1 is a much more appropriate time for such a report, after the field work is done."

Then Senator Jones said: "Do you think they can make a report by January 1?"

Director DAVIS. They can make it by January 1, 1924.

Mr. HAYDEN. What was the date of that hearing?

Mr. WEBSTER. July 10, 1922.

Mr. HAYDEN. Six months have since elapsed. You have lost six months. Director Davis probably meant if he could get the money then, the Reclamation Service would have a year and a half in which to do the work; now you have cut that time down to a year.

Mr. WEBSTER. I imagine that he made allowance for the fact that this bill would probably have a tempestuous, not to say stormy journey before he got the \$100,000.

Mr. HAYDEN. If the \$100,000 is appropriated by Congress within the next three months, then the Reclamation Service would have about eight months in which to make the report. If the Director thinks he can do it, all right.

Mr. WEBSTER. He can do it.

Mr. BIEN. I doubt if there will be any difficulty in getting it through.

Mr. FORD. The original bill, Judge, had the date January 1, 1923, and the question was raised whether it was possible to finish it by January 1, 1923. The statement was made that this bill might not get through the House till the short session, and Director Davis in his testimony—I do not have the exact date—mentioned that he probably would not be able to begin work until early in the new year. That is how that date was arrived at.

Mr. HAYDEN. We have had this experience in connection with the Imperial Valley investigation: There was a definite date, the 1st day of December, when the report must be made. The \$20,000 was appropriated and that date was set, as they stated it could be done by that time. December 1 date arrived and the Director of the Reclamation Service had to submit to Congress a preliminary report saying that there had not been time to complete the field work. We merely received a preliminary statement saying that the work was in progress, which contained no conclusions at all. Then, some months afterwards, a final report was submitted, which did not become available for about a year. The Reclamation Service is going to do this work as quickly as possible, and there is no advantage in setting a definite date.

Mr. RAKER. But what I wanted to do was to get before you, Mr. Hayden, and the rest of the committee, the advisability of general legislation on this subject.

Mr. HAYDEN. If I had my way about it I would appropriate at least a half million dollars every year, so that the Reclamation Service could investigate all of these projects.

Mr. HUDSPETH. Why not pass out of this committee a bill authorizing that amount?

Mr. HAYDEN. I will gladly vote for such a bill.

Mr. RAKER. Of course, this is a big thing, no doubt about that, and worthy, like all the rest.

Mr. HUDSPETH. That is true, Mr. Raker, but we all have big things in our States.

Mr. RAKER. We were able 12 years ago to present a resolution to the National Irrigation Congress and had it carried—I was on the committee—and we decided then that we should take the small projects and we would get more benefit out of them than we would by taking the big ones, and that has been demonstrated by the past 10 years.

The CHAIRMAN. Is it not likely that if we pass a bill of this kind we will stand a better chance of getting appropriations for other projects than we would if we came in asking for a large fund for general investigation?

Mr. HUDSPETH. I do not think so, Mr. Chairman. I vote for all these things. I voted for the Imperial Valley and I expect to vote for this, but my people down in Texas have been going down into their pockets and putting up money for these investigations for years without any aid from the Federal Government. That doesn't reflect any credit on me as their Representative here.

The CHAIRMAN. The people in my State put up \$10,000 on one project and the Reclamation Service \$3,500.

Mr. HUDSPETH. My people have always put up every dollar and the Government don't put up a nickel.

The CHAIRMAN. Well, at the next meeting we will take those things up.

Mr. WEBSTER. Before you adjourn, Mr. Chairman, since Director Davis is not here, I should like to ask permission to make part of these hearings his testimony before the Senate committee on this bill.

Mr. SINNOTT. He will be here.

The CHAIRMAN. If we do not have an opportunity of hearing the director I think that would be proper.

Mr. WEBSTER. I understand that Director Davis will return to Washington Sunday.

Mr. BIEN. He left Los Angeles on the 5th.

The CHAIRMAN. Then we may be able to have him before the committee soon.

Mr. RAKER. I think we had better have him, don't you?

The CHAIRMAN. Yes; I think so.

Mr. WEBSTER. Then it will not be necessary to make his statement a part of the record.

The CHAIRMAN. If we do not have the opportunity of hearing him, we can incorporate his statement in the record.

Mr. WEBSTER. Mr. Chairman, I also have here two short resolutions relative to this bill, one adopted by the national convention of the Farmers' Educational and Cooperative Union of America, Lynchburg, Va., November, 1922, a short resolution indorsing the project; and one from the national headquarters of the American Legion. I would like to have those made a part of the record.

The CHAIRMAN. Without objection the resolutions will be made a part of the record. (The resolutions referred to follow:)

RESOLUTION ADOPTED BY NATIONAL CONVENTION OF THE FARMERS EDUCATIONAL AND COOPERATIVE UNION OF AMERICA, LYNCHBURG, VA., NOVEMBER, 1922.

The farmers of the United States recognize that orderly marketing and distribution constitute the largest problems of the farmers of the United States.

It is not the purpose of this organization in asking Congress for appropriations to increase production beyond the point where consumption would make it impossible for the farmers to derive a profit from their labors.

The normal increase in the population of the United States from birth rates over death rates is approximately a million and a quarter a year. It should be the object of American farmers as well as the American Congress to look at the problems in reclaiming lands from a broad, national scope and to meet the needs of increased population of the United States and to provide an opportunity to secure homes for those who desire to till the soil.

The homes of many thousands of farmers in the State of Washington are greatly in need of water for irrigation purposes. To assist our farmers in that section of the country and to reclaim new and fertile areas for agricultural production, we ask the National House of Representatives to concur in the appropriation of \$100,000 providing for the survey of the Columbia River Basin project which has already been approved by the Senate.

Adopted unanimously.

RESOLUTION ADOPTED BY THE FOURTH NATIONAL CONVENTION OF THE AMERICAN LEGION, NEW ORLEANS, LA., OCTOBER 16-20, 1922.

Whereas there are now in the United States millions of acres of swamp, waste, and arid land that can be reclaimed and made available for settlement: Now, therefore be it

Resolved, That the American Legion in convention assembled go on record as favoring the immediate and speedy enactment of legislation by the Congress of the United States having for its object and purpose the reclaiming of such swamp, waste, and arid lands; and be it further

Resolved, That such legislation provide, as had been the policy in the past, that the ex-service men and women of this country be given preferential rights in the settlement of such lands when they have been reclaimed; be it

Resolved, That the American Legion indorses and approves the plans submitted to Congress for the lending of Federal aid to the reclamation of arid lands and the drainage of swamps, such as the Columbia Basin project, the Colorado River, the Shoshone and Platte River projects, the recovery of waste, swamp lands in Florida and Louisiana, and other similar projects, and urges that Congress speedily enact legislation whereby the vast amount of land included therein may soon be made productive, and thus provide employment and opportunity for ex-service men to establish themselves in homes and participate in the development of the great resources of this country.

Mr. SUMMERS. Mr. Chairman, before you adjourn, just one sentence—I do not know whether Mr. Adams has concluded.

Mr. ADAMS. Yes; unless there are some further questions.

Mr. SUMMERS. The question has been raised as to the possibility of speculation and actual settlers being held up on this proposed project. I want to show what has been done by the State of Washington through the Columbia Basin Survey Commission to prevent speculation and protect the actual settler. This language is found on page 29 of their report:

"It is difficult to find any justification for asking a higher price for the raw, undeveloped land than the first-mentioned values of \$3 to \$5 per acre."

Then in italics they have: "*The other costs accrue against the actual settler and farmer on the land, and he should not pay more per acre than the few dollars mentioned.*"

Mr. RAKER. Now, Doctor, if you will just get your district formed and get a written contract from those people and get it on record, then you have got something to start with.

Mr. SUMMERS. But, Judge Raker, you can not do those things in the preliminary stage, but, of course, that can be done before this comes up to the stage of construction or of asking for an appropriation for that purpose.

Mr. RAKER. I think that is very well put, Doctor.

The CHAIRMAN. The committee will stand adjourned.

(Whereupon, at 12.20 o'clock p. m., the committee adjourned.)

COMMITTEE ON IRRIGATION OF ARID LANDS,

HOUSE OF REPRESENTATIVES,

Wednesday, December 13, 1922.

The committee met at 10 o'clock a. m., Hon. Addison T. Smith (chairman) presiding.

The CHAIRMAN. The committee will come to order. The members of the committee, I am sure, will be interested in knowing that we have as a new member of this committee, Mr. A. R. Humphrey, until recently the very efficient clerk of the committee, who was in November elected as the successor of our late lamented and beloved chairman, Judge Kinkaid, of the eighth Nebraska district.

We will resume the hearings this morning on the Columbia River Basin bill, and the Director of the Reclamation Service, Mr. A. P. Davis, will occupy the attention of the committee.

STATEMENT OF MR. ARTHUR P. DAVIS, DIRECTOR, UNITED STATES RECLAMATION SERVICE.

Mr. DAVIS. Mr. Chairman and gentlemen of the committee, the bill that I understand is under discussion by this committee is one providing for an investigation of the so-called Columbia Basin project for the irrigation of large tracts of land shown on this map from the waters of the Columbia River and its tributaries. The Columbia River, Mr. Chairman, is the largest river of the arid region, one of the great rivers of the world with a very large discharge, with a large fall and enormous possibilities of power development and irrigation. It is a river that is interstate; it is international, and it is navigable. For all of these reasons, as well as the magnitude of the development of that section, it is distinctly a national project, one of national interest, and on account of its interstate, international, and navigational features can be properly handled only under national authority. Incidentally its proper development is of such magnitude that, at least so far as irrigation is concerned, it is an essentially national problem. It strikes me, therefore, that it is proper and appropriate that the bill proposed here should pass providing for a national investigation of the project.

It is one which is not by any means unknown, as considerable investigation has already been made. The first decided attention which the river received from an irrigation standpoint as a whole, I believe, was from the Reclamation Service about the year 1903. Nearly 20 years ago there was an application for power development below Lake Coeur d'Alene on the Spokane River, and that was referred to the Reclamation Service to find out whether it would interfere with irrigation development. It is physically possible to divert the Spokane River from the outlet of the Coeur d'Alene to a large portion of this basin. In order to answer the questions that were asked of the Reclamation Service at that time a reconnaissance was made which developed that there was an immense amount of irrigable land in that area which could be covered.

The CHAIRMAN. At that time the project was known as the Big Bend project?

Mr. DAVIS. I believe it was. The region here [indicating on map] is sometimes known as the Big Bend, where the Columbia River makes a big bend.

Mr. RAKER. Where is the lake you speak of?

Mr. DAVIS. Lake Coeur d'Alene, in Idaho. That project contemplated irrigation of this same land but otherwise it is not the same project. That is, the source of water supply is different. At that time the Reclamation Service decided as a result of its reconnaissance that the physical and financial condition did not justify the withholding of permits to develop power on the Spokane River. First, the project was entirely too large to be ever undertaken with the funds available under the Reclamation Service. It was expensive and probably would not be developed for many years to come, and it was not considered justifiable to withhold natural resources for the purpose of this development from power development. So that the power development went ahead, and many power plants have been constructed on the Spokane River and they are now delivering power to that region.

But this project is a different one. The same land largely is involved but it proposes to take water from the Pend Oreille River. It includes this part marked in red on the map; it includes the dam built to divert the water, the coulees, the channel work, etc., to get the water down to the required distance to the point of diversion in the conduit, about 130 or 140 miles.

Mr. RAKER. What do you mean by coulees?

Mr. DAVIS. It is a local name for a little stream—

The CHAIRMAN. It is not a local name. It is a general name for a small ravine.

Mr. DAVIS. I call it local because it is used locally. It is a French word.

The CHAIRMAN. We have it in southern Idaho.

Mr. DAVIS. It means the same thing as the arroyo in the southwest, which was settled by the Spanish. The word coulee is used in a section that was settled by the French.

The Reclamation Service at one time investigated the possibility of irrigation in the southern portion of this same tract from the waters of the Palouse River by tunneling, etc., and due to various reasons that project was not taken up. It was an expensive one and involved some difficulties which by comparison with other projects presented at the same time led to its rejection. The tract which was proposed to be irrigated under the Palouse project is now included in the tract shown on this map and denominated the Columbia Basin project, but that was only a small project.

The Columbia River, as I have stated, has upon it great power possibilities both upon the river itself and upon its tributaries. Due to that fact permits have been requested from the Federal Power Commission for license to develop power on that stream. The Federal Power Commission in its early history adopted a policy by which on any large stream they would not issue permits or licenses for the development of power until they had made such general investigation as would satisfy them that in doing so they were not curtailing or destroying natural resources, so that the permits could be issued in such a way that they would not interfere unduly with irrigation or with the best use of the water for power or for any other purposes. Following that policy the commission, when permits were issued for the Des Chutes River in Oregon, requested that a committee be appointed consisting of one member appointed by the Reclamation Service, one member appointed by the Army Engineers, and one appointed by the Geological Survey. That board examined in detail the various possible developments of the Des Chutes River and reported what policies were best for the development of this river. I understand the policies of the commission are being shaped accordingly.

Immediately after the rendition of that report the problem presented to the Federal Power Commission concerning the Columbia River became important and some permits were applied for and a similar question arose concerning the Columbia River. In obedience to a request from the Federal Power Commission, the Reclamation Service appointed one member of a board, the Army engineers appointed the same member which had served on the Deschutes River Board, and the Geological Survey appointed the same member. The States of Montana, Idaho, and Washington were invited to appoint members, and they did so. That formed a board of six persons, who were representative of these different organizations I have mentioned and the three States involved. They have submitted to the Federal Power Commission a report, and because of its bearing on this subject I wish to present the testimony and recommendation of the Federal Power Commission, which is to the effect that such an examination as is now proposed is advisable and feasible.

Mr. RAKER. When was this report made, Mr. Davis?

Mr. DAVIS. This report was rendered in June of this year. It was delivered in June. In addition to the gravity project there is the possibility of irrigating the lands of the Columbia Basin project by the construction of a pumping plant at the Grand Coulee at this point. It would require a dam about 200 feet and a pump lift of 400 feet to deliver water into the Grand Coulee, which is supposed to be an old channel for the Columbia River, and from that the water could be diverted on this same land, but would not cover it all, from that one pumping plant to this area.

The CHAIRMAN. How do these two methods of supplying the water to this land compare from an economic standpoint?

Mr. DAVIS. That question I am not able to answer, Mr. Chairman, but in that connection I would like to read a paragraph. The Columbia River Board of the Federal Power Commission made a careful study of that, and their conclusion was as follows:

"This board is not prepared to express on the immediate feasibility of a Columbia Basin project, but considers it evident that if the project is not feasible now rising land values will render it so in the future, and that its economical importance is relatively greater than that of the power which it may destroy. It is further believed that satisfactory information is not now at hand to justify a final decision on the method

of irrigating the Columbia Basin or even on the best location for the dam for a pumping project that will be to the best interest of the public. This board feels that the pumping and the gravity methods of supply have each their strong and their weak features, but is of the opinion that the project investigation, upon which to date less than 10 cents per acre has been expended, has not gone nearly far enough to permit a convincing decision, especially considering that the adoption of the gravity project may result in the permanent destruction of about 650,000 all-year E. H. P., nearly 400,000 of which is located in the State of Washington."

Mr. RAKER. Has this report been printed?

Mr. DAVIS. No, sir; it has not been printed. I understand it is in the hands of the Public Printer now.

Mr. RAKER. I was going to say, if it has not been printed it would be very valuable to print it in connection with this hearing.

Mr. DAVIS. I am not undertaking to indorse or condemn either the statement or the opinion of this board, but I do consider it is a high authority that testifies to the necessity of the investigation of this project.

Mr. SINNOTT. What are the storage facilities for power in the Columbia Basin?

Mr. DAVIS. There are storage facilities at Pend Oreille Lake, Priest Lake, and Flathead Lake. All of these drain into the Columbia River. There are power plants along the Columbia Basin depending not alone on the fall available at this point but upon the reliable steady flow of water. If the gravity line is built, it diverts the water from the Pend Oreille River near the Washington-Idaho line. That river does not furnish enough water during the late summer in its natural state for the development of this project, and the necessary storage can be provided at these two lakes. Pend Oreille Lake is most available for this purpose, and that, taken in conjunction with either Priest Lake or Flathead Lake, will furnish ample supply for this purpose. The proposed diversion will reduce the natural flow in the Pend Oreille River and in all parts of the Columbia River below that point.

The CHAIRMAN. To what extent would it reduce the natural flow?

Mr. DAVIS. By the diversion.

The CHAIRMAN. Do you know what portion of the annual flow would be diverted?

Mr. DAVIS. Yes, sir; about 23,000 second-feet.

The CHAIRMAN. It would be interesting to know whether the establishment of the gravity system would take out of the Pend Oreille or the Columbia such a quantity of water as would make it impossible to build power sites.

Mr. DAVIS. That is a matter of opinion. I think I can quote you right now conflicting authorities on that same subject. If you take all the water in the Pend Oreille River, it would not be sufficient.

The CHAIRMAN. In other words, the storage water on Lake Pend Oreille or Flathead Lake would not be sufficient to irrigate this land?

Mr. DAVIS. Well, that water runs there naturally. Of course the water can be stored in these three lakes.

The CHAIRMAN. Then, if that is the case, why would there be any possibility of power development being destroyed, as suggested?

Mr. DAVIS. That is what I am coming to. It is quite a long story.

The CHAIRMAN. All right, we will let you go right along.

Mr. SINNOTT. The testimony the other day was that on the others it would require 23,000 second feet to irrigate the project.

Mr. DAVIS. Yes; and that, supplemented by storage water, does not take all the water from the Columbia River.

Mr. RAKER. That is to meet up with the Canadian contingencies, is it not?

Mr. DAVIS. Well, it is also to preserve the power possibilities, to make that much available on both sides.

Mr. SINNOTT. All of them will be reported upon by this investigation?

Mr. DAVIS. Yes; and that is referred to in this report of the Federal Power Commission.

Mr. SUMMERS. With this minimum supply provided for, it could not interfere with primary development.

Mr. DAVIS. I am coming to that.

The CHAIRMAN. Suppose we allow the director to go ahead and make his own statement and then we can ask him questions.

Mr. DAVIS. Yes, sir. I think we can gain time in that way.

Now, if a dam is built on the Columbia River, at the head of the Grand Coulee, the water would be intercepted from all the drainage above that. No storage, or very slight storage is required, if that is done, to furnish water for this purpose, because of the very large flow of the Columbia River. I think no storage is required, but that is not fully admitted. However, a little storage might be advisable, but it is relatively very small.

Now, that means, ingeneral, that the storage in those three lakes would not be required for this irrigation project because there is enough without. It means that storage that is available in these magnificent reservoirs would become available for power purposes, and every power site on that river below that point on the Columbia and its tributaries, including the Grand Coulee, would receive the benefit of that storage. That means that the power development on the Columbia River and its tributaries would yield 650,000 more horsepower than it would without it, if that storage was used for irrigation.

Now, that is the testimony of this board. It is not mine. I am simply quoting, Mr. Chairman. But this is a public document on which a large amount of labor has been employed and I think the board is entitled to its opinions. That statement that the additional power then would be available applies only to the Columbia River down to the mouth of the Snake River and does not include some power sites of doubtful feasibility, nor anything below the mouth of the Snake River, as I understand the tabulation of the board.

Mr. SINNOTT. You mean they did not report on anything below?

Mr. DAVIS. They have tabulated, but they did not go any further than Priest Rapids. The power site at Priest Rapids and all of those above that were considered feasible are listed in there, showing how they arrived at 650,000 horsepower. They did not go below that point.

Mr. SINNOTT. But the investigation proposed could cover anything below?

Mr. DAVIS. Yes; I think so.

Mr. SINNOTT. Do you not think it should cover everything below?

Mr. DAVIS. I think it is desirable to leave whoever is in charge of this investigation as wide authority as possible.

Mr. RAKER. In other words, bringing the water by gravity along the line between Idaho and Washington and taking it by pump at the Grand Coulee, there is a difference of about 650,000 horsepower saved by virtue of pumping it out of the Grand Coulee River.

Mr. DAVIS. That is the conclusion reached by this board. It has been criticized by one member of the board and he has submitted a minority report which is all in here.

Mr. RAKER. Does that take in the investigation of all the power projects and the irrigation development of that river in all its branches from Priest Rapids?

Mr. DAVIS. All the principle ones that they considered feasible and important.

Mr. RAKER. Does the territory that is marked off there on the map include the watershed of the Columbia River?

Mr. DAVIS. I would not like to say that those conclusions include all the power sites in the basin. They only affect those that the storage would bring into discussion.

Mr. RAKER. That is all this discussion pertains to, that all this water from the watershed goes into the river and it is affected in that respect.

Mr. DAVIS. No; a great deal of this drainage comes into the Spokane River, in the Coeur d'Alene River, and in other ways. The question under discussion is the effect of this storage and of course it applies only to the streams that can be fed by that storage. Anything above them would not be affected by what we are discussing to-day. The only virtue that is claimed for the gravity project is that it leaves these magnificent storage reservoirs—which are very large, very cheap, and very efficient—for the sole use of power. Now, that means that more power can be developed than for anything else.

Mr. RAKER. I want to ask you, from your understanding, whether or not this commission, known as the Power Commission for the basin, took into account the amount of water and its relative use for irrigation and power, as it is marked on this map, relative to the watersheds, to Flathead Lake, Pend Oreille Lake, and Priest Lake, and also in connection with the intake of this canal as well as the Grand Coulee diversion project?

Mr. DAVIS. They undoubtedly took into consideration all of the elements affecting this conclusion. Just what their mental processes were I do not know, nor have I freshly in mind their entire course of reasoning. It has been some months since I read this report, but I reviewed it hurriedly last night. I read it more carefully last July and August.

Mr. RAKER. Does this report show the facts upon which they drew their conclusions?

Mr. DAVIS. Oh, yes; it shows the flow of the stream, certainly.

The CHAIRMAN. Is that the final report or a reconnaissance?

Mr. DAVIS. It is the final report of this board. That is, it covers the subjects referred to this board. The board had before it the question of what was the best use of the Columbia River in order to guide the Federal Power Commission in issuing licenses. Now, Mr. Chairman, I do not wish anything that I have said to be regarded

as conclusive on any point except the one point that is under discussion, whether or not this project ought to be investigated as a national enterprise. It is my conclusion that it should be and I am giving you the reasons. I am not giving my conclusion nor the conclusion of anybody else concerning the advisability of the pumping or gravity projects.

Mr. HUDSPETH. I understand you have been on this project personally?

Mr. DAVIS. Yes, sir. I have visited the dam site on the Columbia River and I have visited the diversion site there with this idea in mind, and I passed along the most accessible and interesting points of this system, including the ends of the tunnels and all the dam sites. I spent a day and a half in driving over the project. Previous to that, however, I had seen a great deal of the land. I went over the project proposed to be irrigated from the Palouse River and over the project proposed to be irrigated from the Snake River. In traveling over that land and looking at it I formed the opinion that land as magnificent in possibilities as that land must be at some time watered if there is a possibility of doing it. It is the largest and in every respect one of the most ambitious irrigation projects now before us. I agree with the board that if it can not be considered feasible to-day it will soon become so, and that the matter should be handled in such a way as to preserve the natural resources to the best advantage so that we may get the most out of them. As I understand it, that is the purpose of this bill, and to my mind it is a very wise and statesmanlike proposition to have this whole matter investigated at the present time, and then in the light of the information available Congress can take such action as seems wise.

Mr. RAKER. It is rather a large question there. Taking the examination that was made of the Big Bend project, the examination made by the State of Washington and the adjoining States, the data that has been gathered and the report you have here, and then there were a couple of smaller projects which have been thoroughly examined—

Mr. DAVIS. The Palouse project and the Snake River project; yes, sir.

Mr. RAKER. Just where is the data lacking, if that is all put in proper shape and form?

Mr. DAVIS. There are many things that are investigated in a broad way only. That investigation was largely of the main canal which required a large amount of consideration in order to shed the maximum amount of light on its feasibility. It was investigated wisely and accurately so far as the funds were available, but when it came to the distribution system, the area was very large and a large portion of it was lumped in at a rough estimate per acre.

Mr. RAKER. That has since been provided for by examination acre for acre?

Mr. DAVIS. No; the detailed surveys have not been made of the distribution system.

Mr. RAKER. I thought they had been made.

Mr. DAVIS. No, sir. Some of the main laterals have been, but the distribution system has not been examined into to the full extent, because that would be impossible with the amount of money available. The last investigation was devoted mainly to the investigation of the dam site at the head of the Grand Coulee. Additional borings should be made in that vicinity. Also at the tunnel sites.

Mr. WILLIAMSON. This investigation is for the purpose of outlining the necessary canals and laterals so as to determine the final feasibility of the project as an irrigation undertaking?

Mr. DAVIS. That is as I understand it. Of course, that is not detailed in the bill and not having drawn the bill I do not know just exactly what is in the minds of those who did draw the bill, but I think that would be a wise purpose. One of the things recommended by this commission is to make some further comparison of the merits of the pumping and gravity projects. That required this detailed investigation that I speak of, and for this reason, that canals coming here will run in this way [indicating on map], canals running here will come in the opposite direction, and the pumping project not having any head or fall to spare, they have proposed building these canals on a much lighter grade.

Mr. RAKER. General Goethals was before the committee and he left the impression with me, and I think with Mr. Hudspeth, that all the examination from the intake where the beginning point is—

Mr. DAVIS. Albany Falls.

Mr. RAKER. Including the gravity system as well as the Grand Coulee diversion, with the ditches made and the laterals on the line, had been investigated by him thoroughly with sufficient surveys, and all the information that he desired or anyone else would desire was that which related to the storage of the waters of Pend Oreille Lake, Priest Lake, and Flathead Lake. How did he get that?

Mr. DAVIS. I have not read General Goethals's testimony.

Mr. SUMNERS. I would like to say as one member of the committee that I understood from General Goethals's testimony that there were many other problems besides these; that these were things to be determined but there were many others.

Mr. DAVIS. I should have stated that the details of the storage provisions there are also important and ought to be covered by this appropriation if it is possible to cover them thereby. There is possibly more storage in those three lakes than is necessary for the gravity project. Just how much should be developed and whether two or three lakes should be developed is a question that should be studied.

Mr. LEATHERWOOD. Are you able to give us any idea as to the details of any engineering problems that are yet to be solved out of this investigation?

Mr. DAVIS. That is what I have been trying to do for the last 10 minutes.

Mr. LEATHERWOOD. I confess that I have the same idea that the gentlemen on the other side of the table has, that the engineering problems have been largely worked out and that the problem is largely one of climatic and soil questions.

Mr. DAVIS. You have an excellent illustration of how similar climatic conditions will affect the situation and that is in the Yakima Valley. You will find those conditions in different parts of this project just as they are in the Yakima Valley. Of course, a more detailed study might be given to them, and also some details would be desirable concerning the soil survey which would add to our information on the subject and lead to a more accurate classification of the land. This is not said by way of criticism of any of the investigations that have been made, because this has necessarily been of a reconnaissance nature so far as the soil is concerned, except where it is covered by a detailed survey of the Bureau of Soils. The results are widely different in character. Some soils may be sandy and others may not be. Those details require considerable time and money to work out, but they are desirable to have for many reasons. I think there is no question but what a properly constituted authority in charge of this project would find plenty to do. I have never found a project yet of this magnitude that did not require a good deal more expenditure upon it than was originally contemplated.

Mr. LEATHERWOOD. Is there any dispute but what that land is fertile if water is put upon it? A soil examination would only go to the particular crop that it might be adapted to.

Mr. DAVIS. There are two or three other important points that would be brought out. The classification that has already been made ruled out a large portion of the land that could be covered by gravity. I was reading in the report last night that considerable of that soil had been excluded. You see these vast areas on the map colored in yellow. Those outlines are in the rough. I do not know how detailed they are because I am not thoroughly acquainted with the details of what has been done there, but I do know that the amount of time and money that has been spent upon it is not as great as would be desirable to get more accurately at the acreage that should be covered; but that is not all. A portion of this project is sandy land with a coarse subsoil which requires more water than average soils. We should know its outlines accurately.

Mr. RAKER. Mr. Davis, would a question here interrupt you in the presentation of your statement?

Mr. DAVIS. No, sir.

Mr. RAKER. This project, from your standpoint and knowledge, is one that appeals to anybody who knows anything about it all. About how many projects, large and minor, are before your department in which you are seeking an investigation? Could you give us any idea?

Mr. DAVIS. There are a large number, as near as I can come to it, the majority of which are probably not feasible. But we have frequent applications for investigation of projects in various parts of the country, including the Southern, Northern, and Gulf States, and all over the West.

Mr. HUDSPETH. While they are not as large as this project, many of them are just as feasible and just as desirable and would be valuable as reclamation projects?

Mr. DAVIS. Yes, sir; in proportion to the size.

Mr. RAKER. In other words, a tract of land containing five or ten thousand acres, separate and independent, with water on it and developed, is practically as important as the same amount of land within a large tract?

Mr. DAVIS. Yes; other things being equal, with the soil and climatic conditions and all.

Mr. RAKER. Now, with that assumption, you have now about \$100,000 annually for what we call secondary projects?

Mr. DAVIS. Yes, sir.

Mr. RAKER. That is for doing what we are trying to get through in this bill?

Mr. DAVIS. Yes, sir.

Mr. RAKER. Now, why not increase that to \$500,000 or \$1,000,000 so that the department would not be hampered and so that the various localities can present the data they have already gathered or assembled together and your department can continue the investigation if it looks feasible, as is provided here?

Mr. ARENTZ. With the idea that the ex-service man will not have a long white beard before he gets on the land?

Mr. DAVIS. Yes, sir.

Mr. HUDSPETH. And so the citizens will not have long white beards before they get on the land?

Mr. RAKER. And further, which is not any disrespect to anybody, that the men who have given a great deal of time to the same kind of work that you are working on now will not be wearing long beards and out of an opportunity to do this work by reason of the separate project as well as the general scheme.

Mr. DAVIS. That method of procedure would, of course, cover the ground and answer the purpose. The procedure you suggest would vest a much wider discretion in the executive officers than appropriations for specific projects.

Mr. RAKER. In other words, all these projects were started with the discussion that you speak of?

Mr. DAVIS. You mean all the investigations?

Mr. RAKER. Investigations and Government projects?

Mr. DAVIS. Oh, yes, sir.

Mr. RAKER. Now, these members around the board are in a like position that we are, and in the long run, if you get \$100,000 to make this investigation, assuming that it is entitled to it from their standpoint, not a legal point can be made against it or an honest argument. Now, will not the same procedure have to be had to get it from the Appropriations Committee to the general bill when it goes in the amount to be considered for secondary projects, as it would if this particular bill should become a law?

Mr. DAVIS. That is, the general rule would require the same process?

Mr. RAKER. Yes.

Mr. DAVIS. I think so.

Mr. RAKER. And you would have to get it from the Appropriations Committee in any event?

Mr. DAVIS. Yes, sir.

Mr. RAKER. And with such a clamor that is going on and the splendid record that is being shown, while this bill looks good on its face, when it is seen by the various localities and States that I could name, and Members representing States that I could name, before it ever gets passed by the House they will say, "Why, Columbia Basin has got a hundred thousand dollars." They will say, "What is the matter with you? Why don't you get one for the Truckee or Baxter Creek? We have a hundred thousand acres out there. We have another hundred thousand acres in the Flanagan district."

Mr. ARENTZ. If you can convince anyone that this is just as much a national question as the ship subsidy and a larger appropriation should be made, so that it would not be necessary to go direct to Congress whenever we want five or ten thousand dollars for an individual project, we might accomplish it.

Mr. RAKER. Is it not your view, beyond all question, that if we can get an amount in the general appropriation bill of, say, \$1,000,000 or half a million dollars—

Mr. ARENTZ. All at one time; yes.

Mr. RAKER. If that can be done, we will get better work and we will be able to give our officers in the Reclamation Service, in whom we all have confidence, a chance to do something, and we will get something done, and our western States will be given a chance to accomplish something?

Mr. ARENTZ. Yes; that has always been my opinion.

Mr. DAVIS. Now, Mr. Raker, to answer the other half of your question about the million-dollar appropriation or the half-million-dollar appropriation to be expended in the discretion of the department, I will say that that amount would depend upon the time limit. I do not think it would be advisable to appropriate a million dollars to be used in any one year, but if the time limit was removed that would not be too large a sum. On the other hand, if a limit of one year was put upon the expenditure of that amount, I think \$500,000 would be ample and probably more than could be most wisely used in one year.

Mr. RAKER. And that would give you a chance to investigate this project and other projects not as large but of splendid merit, with the data sufficient to justify your department in going out and making similar investigations with a 50-50 division?

Mr. DAVIS. Yes, sir.

Mr. RAKER. And that would be establishing a policy that we ought to establish, would it not?

Mr. DAVIS. Yes, that would be an excellent policy, in my judgment. I would like to say this, however, that there are very few projects which present the valid argument that this one does as being a national problem for the reasons I have stated, namely, first, it is an international river; second, it is an interstate river; third, it is a navigable river, all of which are national problems. And then, furthermore, its magnitude takes it out of the category of being handled practically in a broad way as it should be, either by private capital or by the State. Therefore I say that the United States is the only instrumentality which can properly handle this proposition. Those characteristics are not applicable to any projects that I can recall excepting two, and those are the Colorado and the Rio Grande, which are both international and interstate rivers and to some extent navigable, not to the same extent as the Columbia River, but technically they are navigable rivers. Congress has recognized the interstate, international, and national character of the Colorado River by the appointment of a commission which was charged with the division of the waters of that river equitably between the States, which commission has recently reached a decision, of which you have doubtless heard through the public press.

Mr. RAKER. You say the commission has reached a decision?

Mr. DAVIS. Yes, sir.

Mr. RAKER. With reference to the division of the waters of the Colorado River?

Mr. DAVIS. Yes, sir.

Mr. RAKER. That has been since the adjustment between those two States?

Mr. DAVIS. That was between the several States and the United States, which of course still requires ratification. It is a remarkable decision in view of the fact that there has been no compact to date between so many States—

Mr. RAKER (interposing). Well, I want to go into that later and I will ask you a good many questions about that when we get on the subject of the Colorado River. But outside of the international question, so far as the weather, soil, and climatic conditions are concerned, the Marshall plan in California is about the largest thing on the program to-day, is it not?

Mr. DAVIS. Yes; I believe it is the largest thing on the program.

Mr. RAKER. Yes; it is.

Mr. DAVIS. I agree with you. The Marshall plan is not talked about much any more. However, it has led to some wise action on the part of the State of California in providing large funds to investigate its resources, and has resulted in a wide move on the part of the State engineers, and for initiating that move Mr. Marshall is certainly entitled to credit.

Mr. LEATHERWOOD. The gentleman from Texas suggests an idea that I would like to mention briefly before you leave this point. I believe I am safe in assuming that this committee is willing to accept all the statements as to the feasibility of this proposed scheme. However, from an economic standpoint would it not be to the benefit of the arid-land States to have diversified sections scattered throughout the arid-land regions developed, even though they may be smaller in area? Would that not be better than to have the irrigable areas largely concentrated in three or four localities?

Mr. DAVIS. Well, there is something to be said for that. There are increasing areas in the mining and grazing regions where a smaller area can be made of very large benefit, due to the saving in transportation of food and forage products in that area. In general, I may say that it is desirable to have the benefits distributed, but nature largely controls that for us. In this case the water supply and the lands are concentrated.

Mr. LEATHERWOOD. Of course, I base it not upon any proposition that would be impracticable but on the theory that there are a great many places where the land would be subject to irrigation?

Mr. DAVIS. Oh, I agree with you absolutely on the desirability of the development of a great many other projects. There is no doubt about that.

Mr. LEATHERWOOD. I think it would be very foolish for this committee to take any attitude that some locality ought to be irrigated where it is not feasible.

Mr. DAVIS. No; I did not understand you to mean that. But we do not have the discretion as to where irrigation should be developed because that is fixed by nature, by the supply of water, by the availability of suitable land, and so on. In some respects there are advantages in the concentration policy if it is not too great.

Mr. LEATHERWOOD. Let us assume that all of the territory within the proposed project is feasible, and let us assume further that there are many localities in the arid land States that are just as feasible, and that the only difference is that they are much smaller in area. Now, the thought suggested by the gentleman from Texas was this: If there are many other smaller areas that are feasible from an engineering standpoint, and the lands can be brought under cultivation by irrigation, then from an economic

standpoint would it not be highly beneficial to all the arid land States to have it diversified rather than having a large area irrigated and the smaller areas neglected?

MR. DAVIS. Let me see if I understand the purport of your question. You mean that the small widely distributed projects should be developed first and that this should be repeated forever?

MR. LEATHERWOOD. Oh, no; it is just as important that the smaller areas should be developed—

MR. DAVIS (interposing). In proportion to their size; yes, sir.

MR. LEATHERWOOD. And that the greatest good to the country would be the development of them altogether and not one to the exclusion of the other?

MR. DAVIS. I agree with the statement that you have made entirely and I can quote the Columbia Basin Commission, which has had charge of the investigation here, that this is a project for the future, that the smaller projects, even in their own States, should first be developed. That is, assuming an equivalent feasibility. As a matter of fact, I do not think that needs very much elaboration because that is the way it is going to come anyway. It is not an easy matter to get a large amount of money together such as a big project would require. It is easier to get smaller projects together under one fund. Now, I think I can say with some personal knowledge, after 25 or 30 years' experience in locating and developing projects, that every project will develop things that we do not foresee. We are not prophets and we can only act in the light of our experience. In the organization of a project we have got to contend with many unknown factors. Every project contains some, and some of the smaller projects have been failures for that reason. We have endeavored to reclaim lands that did not hold water. Sometimes we have undertaken development in a region that has not sufficiently arid land to create a demand for water. Some things will develop in this project, I do not care how much money you spend on it, that you will not accurately foresee in an investigation before beginning work. Now, I will give you an illustration of that. There probably never was a project put through with as thorough, as long, as expensive, and as skilled investigation as the Panama Canal.

That canal was conceived away back in the seventies and construction started and a large amount of excavation was carried on. Before that was done, I do not know just when, but very thorough investigations were made in there by drilling and excavating pits to sea level with the idea of developing the difference between a sea-level canal and a lock canal. After some \$300,000,000 had been spent upon investigations and construction work, all of which developed information, the United States went into it and spent several million dollars investigating that project after they took hold of it, and yet the criticism is made to-day, in which I do not concur, that that project was undertaken with insufficient investigations before it was constructed. We all recall the slides that occurred. I was a member of the committee that went down to investigate the slides, that committee being sent by the National Academy of Sciences. I was on a previous consulting board that investigated the slides and the Gatun Dam. I think it would have taken almost a superman to have constructed that canal more wisely than it was constructed. I have no criticism whatever to make of the investigations or the construction, but immediately upon the opening of the canal we had a surprise in the way of an unexpected slide. We had the opinions of a board of 13 expert engineers who passed upon the slopes on which that canal should be constructed. Those slopes were flattened somewhat, but in spite of that these slides occurred. The majority of that committee of which I was a member reported that they should have investigated further and found out more about it in order to prevent those slides. As a matter of fact, a portion of that canal slid in the Cucaracha formation, and yet another portion of the same formation, constructed on the same slope, did not slide. No man can tell to-day why.

I claim that the investigation could have not been shown that. Of course, it would have been possible to construct the canal on a flatter slope so that those slides would not occur, but we did not know what slope that would be. A portion of that slope is still standing to-day, and we do not know whether it will be standing a hundred years from now or next week, but it has not slid yet. But why that did not slide and the other portion did, I do not think any man can answer. Now, that illustrates what I say, no matter how exhaustive the preliminary investigation, every big and little project may develop some surprises, and the failure of a small project is not so serious as the failure of a large project.

MR. SINNOTT. Is there repose on the Canal now? Is there any sliding going on to-day?

MR. DAVIS. There has been no recent interruption of traffic, I believe, but I do not suppose there has been a minute in the last 10 years that there has not been some movement of the earth down there.

MR. HUDSPETH. Mr. Davis, would you care to commit yourself at this time to the amount that you would recommend for these secondary surveys and inspections for one year?

Mr. DAVIS. For one year?

Mr. HUDSPETH. Yes, so that you could investigate all of those projects that appeal to you as being feasible.

Mr. DAVIS. To be taken from the general fund in the Treasury?

Mr. HUDSPETH. Yes.

Mr. DAVIS. Mr. Hudspeth, my authority extends only to the reclamation fund, and it has always been my practice to make those recommendations through the proper channels. I am supposed to be guided in all such matters by the Secretary of the Interior, and for that reason, while I do not refuse to answer your question, and will answer it, I want to be understood as answering your question because you have asked me and not of my own motion.

Mr. HUDSPETH. You can answer the question if you wish to do so.

Mr. DAVIS. I think a policy of that kind should contemplate a considerable time, that it would be unwise to limit an appropriation to one year, or if the appropriation—

Mr. HUDSPETH (interposing). The reason I stated a year was because I got the impression from your statement that you thought it ought to be limited to a year.

Mr. DAVIS. Oh, no. The point I made was that if it is limited to a year it ought not to be so large as when the time limit should be removed.

Mr. HUDSPETH. What limit would you set?

Mr. DAVIS. I would not fix any limit at all. The suggestion made by Judge Raker would be sufficient to give the department a free hand, but that should be done from year to year, and if that was done I think it should be contemplated in advance that the investigations should extend over a series of years, because a large sum of money could not be economically expended in one year for the reason that our information and our knowledge is always growing and the expenditures should cover continuing investigation. I would suggest an appropriation of \$250,000 for the first year and after that, say for three years, an appropriation of three hundred thousand a year would be ample to develop the feasible projects of the West and determine in a general way their economic value, coming to a total of a million dollars or so, such as you suggested a few minutes ago, but not necessarily expended all at once. It should be expended year by year until the investigation was completed. I do not think the whole appropriation should be made at once because the service would be overwhelmed by the demands upon it. I am not one of those who believe in asking for more money than it is wise to spend.

Mr. HUDSPETH. That is the reason why I want to get your judgment on the matter.

Mr. ARENTZ. Mr. Hudspeth, it would be impossible to double the amount of work in one year on account of the limited number of men who are fitted for that work. Is not that true, Mr. Davis?

Mr. DAVIS. I do not agree with that. If this was an organization spending only a hundred thousand dollars a year your remarks would be entirely to the point, but the Reclamation Service is expending from twelve to fifteen million dollars a year.

Mr. ARENTZ. But you have these trained men in places where they are supposed to be essential and you would have to take them off of that work and put them on this investigational work?

Mr. DAVIS. That is true, but an organization such as we have is susceptible of a good deal of elasticity. If we had a choice of a number of men required to spend \$14,000,000 a year the choice necessarily would be much wider than if we were only spending \$100,000 a year.

Mr. ARENTZ. While we are on that point, would you mind mentioning whether or not it is just as easy to get men out of college to-day as it was 10 years ago for this rough field work?

Mr. DAVIS. I think I can say it is not quite so easy, but we have not taken in so many men of that character lately, although occasionally we have some.

Mr. ARENTZ. Men who are at present engaged in handling the work of developing national resources say that it is very hard to get college graduates to take up the work that they took up gladly 10 years ago.

Mr. DAVIS. I think that is largely due to the salaries, and in that respect I can confirm it. The salaries of Government officials have not grown in accordance with the salaries of similar officials outside the service.

Mr. ARENTZ. Do you not think it would be due to the spirit which is expressed in the present unrest among our people, because they would rather be in a city where they can view the lights than taking a chance on something which may return to them from their experience in 5 or 10 or 15 years?

Mr. DAVIS. I think there is a great deal in that, but it differs with the men and their occupations. We find that the majority of our projects are isolated from social attractions, from transportation, and other facilities such as you have in mind. That

has a great deal to do with the clerical force and the people whose business normally keeps them in the city, but it has mighty little to do with the choice of an engineer. Strange to say, engineers and their families do not object to the hardships of the camps and the isolated frontiers to the same extent that they would if they were in other lines of work in the service. It is very difficult to keep sufficient clerks on our force but not so difficult to keep engineers, except for the fact of direct competition. Engineers expect to rough it. Of course, we have to meet competition in salaries, and our service is damaged by not being able to pay salaries commensurate with salaries paid on the outside.

Mr. SUMMERS. I would like to have you discuss one phase of this situation, Mr. Davis. In view of the fact that the Federal Power Commission by their decision have practically tied up 650,000 hydroelectric horsepower for all time or until the matter is determined as to which of these projects is the more feasible, or whether either one of them is feasible, is this not a very pronounced argument for the pushing ahead and the final determination of the feasibility or otherwise of this whole matter; and also which of the proposed plans is the more feasible? There is 650,000 horsepower tied up, until this matter is settled, by the decision which has been rendered by this commission.

Mr. DAVIS. I agree with you, and that is my purpose in reading from this report.

Mr. LEATHERWOOD. Is it not true, if you follow that line of argument, that there is a great deal of horsepower locked up at other places which ought to be unlocked?

Mr. DAVIS. That is true.

Mr. BARBOUR. Is there any problem on the Colorado River between two States that has recently been adjusted?

Mr. DAVIS. I think nothing as acute as this. There are international problems and also interstate problems. It occurred to me, merely as a suggestion—I do not know whether it is worth anything or not—that a similar commission could be formed by sending commissioners from Montana, Idaho, Washington, and Oregon to examine this matter and reach an interstate agreement concerning the development of these waters, at a more opportune time, after this investigation which is now asked for is completed. There would have to be a convention entered into, certainly in the case of the construction of the Grand Coulee Dam. Either that would have to be provided with a lock lifting boat something like 200 feet, or it would have to be rejected, or we would have to remove the treaty provision contained in our convention with Canada that the United States will do nothing to interfere with navigation on the Columbia River. Probably some objection might be made by Canada to the diversion of the waters of the Pend Oreille River, but that is a remote possibility. That was the purpose in putting Idaho and Montana on the board that investigated this matter for the Federal Power Commission, but they bind nobody.

Their agreement to this report is not binding upon any State, nor was it expected that it would be binding upon any State. Some binding agreement, I think, might eventually turn out to be desirable. I am expressing a doubt about that because disputes between States on a matter of this kind do not seem to be difficult of removal. The storage of water there would be objected to, of course, at the Flathead by the residents around the lake. To some extent the riparian land owners might object in other places, but those objections can probably be overcome by the power of eminent domain. On the other hand, if those objections are sufficiently strong to arouse a State antagonism, the power of eminent domain can not remove those objections, and rather than throw the matter into litigation those objections would better be removed in some other way. That is really what the decision in the Colorado River case amounted to. There was water enough for all and nobody was going to lose anything. That explains why seven States could get together. Perhaps they could not have done so if that had not been the fact.

Mr. RAKER. Seven States adjusted it among themselves and the Federal Government is left out?

Mr. DAVIS. Well, in one sense; yes. The Federal Government was represented and its representative agreed to this arrangement, but the arrangement is not valid until it is approved by the United States Congress.

Mr. RAKER. I was reading that, and I was just wondering whether or not that arrangement between the seven States does not adjudicate everything against the Federal Government.

Mr. DAVIS. I think not. The fact is, however, that is a compact between the States and not with the United States. The United States is not a party to the compact. It comes under the constitutional provision that such a contract can not be valid until it is approved by the United States, but the consent of the United States to the different States entering into an agreement among themselves does not necessarily make it a compact with the United States.

Mr. RAKER. Does not that leave out the United States in the adjustment of the use of waters for purposes of this kind?

Mr. DAVIS. It is in that sense left out; but in another point of view the United States has no interest other than the interests of the States and their mutual interests, except the international interests.

Mr. RAKER. In reading that Colorado case and reading this treaty—and I have read it two or three times—I must confess that the purpose is not clear in my mind. I was wondering what that agreement was drawn for. It is an adjustment between the States, but it leaves out the Federal Government. It is just like a similar adjustment that was made between the States of Oregon, Idaho, and Washington for the purpose of building the Columbia River project.

Mr. DAVIS. You would like to have my opinion of that?

Mr. RAKER. Yes.

Mr. DAVIS. I can not agree with the suggestion that it jeopardizes the rights of the United States. There is one paragraph in that compact which provided for a predominance of irrigation and domestic uses and power uses over navigation. It was claimed by the counsel of the United States that if that arrangement was approved it would override and discard the authority of the United States over the river, and in order to guard against the disapproval by Congress of the whole compact a provision was inserted in the agreement that if this paragraph was disapproved by Congress it should not operate to vitiate the entire treaty, and therefore Congress may reject the provisions of that paragraph without rejecting the entire treaty. That is the way that difficulty was overcome. The question you have raised was discussed by the commission and I think I am violating no confidence when I say that it was resolved in the way that the Federal representative desired. There was some justification in the Federal act for assuming that this commission could divide the water. Most of the States, on the contrary, passed an act to divide the use of the water, not making any division of the actual corpus of the water. The word "uses" was incorporated in it in order to remove any doubt in the matter as to whether or not it was a surrender to the authority of the United States.

Mr. RAKER. I did not have an opportunity to get all of the proceedings and I was wondering whether or not that question had been gone into. It seems to me that the agreement sets out the same question that is involved between the three States.

Mr. DAVIS. Yes, sir; the questions are somewhat similar. In this case I think it is possible to get a maximum development from the natural resources without jeopardizing the interests of any State. That is also true of the Colorado River.

Mr. RAKER. And still at the same time keeping us on terms of peace and justice with foreign countries?

Mr. DAVIS. Yes, sir. Now, unless there are some further questions, I have concluded.

Mr. SINNOTT. Mr. Davis, I would like to ask you a question. This bill contemplates an investigation and report upon the water supply which might be made available for the Columbia basin project and also a report upon any other lands capable of being irrigated by the waters to be conserved by this project. Now, right down here in Oregon at this point on the map is what is known as the Umatilla project, a possible power project where they hope to develop several hundred thousand horsepower and irrigate from three to four hundred thousand acres of land both in Oregon and Washington?

Mr. DAVIS. Yes, sir.

Mr. SINNOTT. The minimum flow of the Columbia River there is approximately 40,000 second feet. They propose to take out of the headwaters for the Columbia basin project some 23,000 second feet. Now, could not this investigation and report cover an investigation and a report bearing upon the effect of this diversion upon this Umatilla project? That could all be reported at once, and investigated.

Mr. DAVIS. Yes, sir.

Mr. SINNOTT. So that we may know how this Columbia River project is going to affect the Umatilla project?

Mr. DAVIS. Do you mean to ask me whether this appropriation provided for in this bill would be sufficient to fully investigate this project as well as the Columbia basin project?

Mr. SINNOTT. Yes.

Mr. DAVIS. No; it would not.

Mr. SINNOTT. So that we may know the effect of the diversion of this water upon the Umatilla project?

Mr. DAVIS. That could be investigated, but if the investigation was to include an investigation of the possibilities of power development in the Umatilla Rapids, it is not sufficient for both purposes.

Mr. SINNOTT. About how much more would be necessary to cover that investigation?

Mr. DAVIS. I should say it would have to be probably doubled because it would require borings and other investigations of the soil, etc. It has not been investigated in that way at all.

Mr. SINNOTT. Apart from the borings how much more additional would it take to determine the effect upon the Umatilla project of the diversion of this water?

Mr. DAVIS. The effect could be determined without much investigation of the Umatilla project because we could readily find out how it would affect the water supply which would be mainly affected by that project. That could be determined without reference to the feasibility or cost of this other project down here, but it would not be of very much interest, of course, unless some light were thrown upon the feasibility of the Umatilla Rapids, because if that project were not feasible it would not make any difference, and on the other hand if it was feasible it would make some difference.

Mr. SINNOTT. Assuming it was feasible, your investigation could cover an investigation of the effect upon the Umatilla project of the diversion of this water?

Mr. DAVIS. Yes, sir; but I do not know whether this language is sufficient, if that is what you mean.

Mr. SINNOTT. Well, we could easily change the language to cover that. I will say there have been large public meetings in Oregon to consider the Umatilla Rapids project. They have been very much interested in the Umatilla project.

Mr. DAVIS. Yes; I am aware of that.

Mr. SINNOTT. And I would like to know the effect of the Columbia Basin project upon that project.

Mr. DAVIS. Yes; that could be determined.

Mr. SINNOTT. You think your report could cover that?

Mr. DAVIS. The report could cover the effect upon the water supply, but I am not sure whether this language would be sufficient to cover an investigation of the Umatilla Rapids. A thorough investigation would require more money. The matter of setting forth the area and the amount of pumping required could be accomplished with a small amount of money if the language was changed. I think such an investigation would be pertinent to the subject, but whether the language would be sufficient to cover it, you would have to ask a lawyer after the bill had been signed.

Mr. SUMMERS. Before you conclude, Mr. Davis, have your investigations so far made enabled you to determine which of the two plans is the more feasible—pumping or gravity?

Mr. DAVIS. No, sir; I have not been able nor willing to make up my mind on that subject so far. The arguments on both sides are pretty heavy, and the facts are not all agreed upon in the different opinions that have been expressed. I have not given it sufficient investigation personally to determine those facts for myself, nor do I think the investigations so far are sufficient. I base that opinion largely on the opinion of the Federal Power Commission's board because they have made far more exhaustive investigations on this subject than I have, and it is a large board with very competent men upon it. I defer to their opinion in that respect. I do not think the facts are sufficient for the purpose, and, in fact, I know a good many places where they are lacking. For example, one opinion is that the borings that the commission has made at the Grand Coulee Dam site are more favorable than was assumed in the report, and the other opinion is that they are less favorable. I have not examined sufficiently to determine which of those two is correct or whether either one of them is true. It is not a very easy matter to determine, because the conditions are different from what they were some time ago, and whether they are improved or hampered by one thing or another is always a question of opinion, and I am not able to express an opinion at this time.

Mr. RAKER. Take the State of Montana as it is delineated on the map, with the watershed, with the heavy blue line. This investigation would determine the water supply in that State, its source, and the available lands for irrigation and whether it was feasible over the greater part of the State of Montana, would it not?

Mr. DAVIS. This problem involves a discharge only at the outlet of the lake, and other details at the reservoir sites, and the discharge at the two points, the point of diversion here and the other point there [indicating on map].

Mr. RAKER. It appears to me that before any work could be accomplished on either of these two or three lakes, Priest Lake, Flathead Lake, or Pend Oreille Lake, that all the available land and water and the application of the water to the land would have to be determined by these two States within this watershed so as to see how much water they would need for the two States before any of this water would be permitted to come into the Columbia irrigation project.

Mr. DAVIS. Estimates of the required consumptive use of water in those States, of course, are necessary to find out how much would be left for the use of this project, if those developments were to be left unhampered. Estimates of those uses have been made by the State engineers and are considered by the Federal Power Commission. My belief is that they are probably ample.

Mr. RAKER. What I am getting at, Mr. Davis, is that it would be a practical examination of all of this territory as to the available irrigable land and the amount of water applicable to it, and then a determination whether or not it would be feasible in these States within the territory before you could come to a conclusion as to the Columbia Basin.

Mr. DAVIS. I think not.

Mr. RAKER. Then I will put it this way. It would be necessary to obtain that information?

Mr. DAVIS. It would be necessary to have some idea of it. It would not have to be known accurately, probably not more accurately than it is now. I think it would be well to check up the statements of the State engineers regarding the amount of water required, and we may generally assume that the statements they make are ample in size, and as made now they show a surplus. In other words, for the gravity project we would not need all of those reservoirs. We could get along with the Pend Oreille Lake and either of the other lakes, Flathead or Priest Lake.

Mr. RAKER. What I want to convey to you is this, that the feasibility of the Columbia Basin project in the State of Washington could not be fully determined, as General Goethals said, until the States of Montana and Idaho were satisfied relative to the impounding of water in Flathead Lake, Pend Oreille Lake, and Priest Lake, so as to make an equitable adjustment.

Mr. DAVIS. Yes; as a human and physical fact that is true. They must be satisfied.

Mr. RAKER. Now, that being true, what I want to know is this. The last statement being true, and it seems to be conceded by all, then it would be necessary to make a fairly accurate survey of the land and water resources of those two States within the watershed.

Mr. DAVIS. We would have to have sufficient information to satisfy them on that point. Now, the point which I have been trying to make is that we do know those facts, with so wide a margin that it covers any error in the available data.

Mr. RAKER. The question I want to ask you is this—and this is a good opportunity to put my question on the Colorado River, because if you have not investigated it yet this will give you an opportunity to do so—whether or not the Government would be justified in putting money into an irrigation project like the Columbia Basin at a cost of \$250,000,000 unless it knew under the law it had a right, by virtue of prior appropriation, to control the waters that would come into that basin for future use?

Mr. DAVIS. The Government would have to be satisfied before it could wisely do that, that there was no reasonable probability of an interference with the water supply that would vitiate the feasibility of the project.

Mr. RAKER. And the Government would have to have a prior right to divert the use of that water, the same as a private individual?

Mr. DAVIS. Yes; the Government's rights in that respect are not thoroughly decided. No court has decided what its rights are. There are three different theories that were advanced in the recent Colorado-Wyoming case, only two of which were decided. Wyoming argued for prior appropriation. Colorado argued that it owned all the water that fell upon its soil. The United States claimed that all of the unappropriated waters of the public-land States belong to the United States until appropriated to use, and that question was not decided.

Mr. RAKER. But it does hold that the Federal Government had a right to appropriate the water in either of those States the same as a private individual, and because there were State lines it did not affect the right of the Federal Government in the matter. Is that right?

Mr. DAVIS. I think there was no decision in the case that touched upon that question. They ignored it.

Mr. SINNOTT. Judge, was the Federal Government an applicant?

Mr. RAKER. Not necessarily an applicant but it was involved.

Mr. SINNOTT. It was acting as a private individual?

Mr. DAVIS. Yes, sir; but Attorney General Davis intervened and made the argument in favor of the principle that the United States owned all the unappropriated waters of the public lands as a riparian owner.

Mr. RAKER. Does not that decision hold, in theory, but not directly, that the Federal Government would have the right to appropriate the waters for a reclamation project?

Mr. DAVIS. I do not think so. The right to appropriate water by the United States Government is involved in the reclamation act that authorizes the appropriation and directs that it be done in accordance with State laws, and that is the practice.

Mr. RAKER. But the Government would have to obtain a prior right, as against others who might divert all of the waters, before the Government would be justified in expending a large amount of money?

Mr. DAVIS. Yes, sir.

Mr. SINNOTT. You have been over the land in that vicinity?

Mr. DAVIS. Yes, I have ridden over it but I have not made any examination of it.

Mr. SINNOTT. You have seen the land that might possibly be irrigated?

Mr. DAVIS. Yes, sir.

Mr. SINNOTT. Could not that land be investigated without very much cost to determine the effect of the irrigation on these waters?

Mr. DAVIS. Yes, sir.

Mr. WEBSTER. Mr. Chairman, I think some of the gentlemen of the committee are laboring under a misapprehension as to the statement of General Goethals regarding the effect of the engineering that has been done by the State commission. What General Goethals was endeavoring to do was to show the different methods to be employed in computing the cost of putting this water on each unit of the area to be reclaimed, as against the method to be employed by the Reclamation Service in similar projects. He did not say, and could not accurately say, that that preliminary work had, in fact, been done. Those estimates in some degree were estimates and not based upon surveys which have already been agreed upon.

Mr. RAKER. I do not know about that, Judge. I got the idea—

Mr. WEBSTER. I do not want to make a statement myself but I want to have Mr. Goodner, who is present in the room, explain the matter to the committee, as he has all the facts.

Mr. SINNOTT. I would like to hear what Mr. Goodner has to say.

STATEMENT OF MR. IVAN E. GOODNER, CHIEF ENGINEER, COLUMBIA BASIN SURVEY.

Mr. GOODNER. Mr. Chairman, in conducting surveys by the State, we made the actual instrumental surveys on the canals and locations in detail down to the 100 second-foot capacity canal, which covers about a 10,000-acre unit, on those areas where we did not have already existing United States Geological Survey topographic maps. Where those maps exist showing contours based on 10, 25, or 50 foot intervals, it is possible to make an office location and check only the control points in the field from the 10,000-acre size down. Both the State engineers and General Goethals checked the cost as arrived at on the Federal and other projects per acre for small distribution. Finding a close coverage on the southern Idaho area to be about \$15 per acre, to the estimates based on actual field surveys we added the lump sum of \$15 per acre to cover the detailed location of arm units. If the General gave the impression that the farm units had been surveyed, it was due to an inaccurate expression on his part, because it was not his thought to make such a statement.

Mr. LEATHERWOOD. Do you think it is necessary at this time to carry the survey down to the farm unit?

Mr. GOODNER. No, sir; not until you approach the construction point. That is one of the construction details. That is not considered until you know you are going to go ahead with the construction work. Where we are able to use the United States topographic maps, they may be checked by actual field surveys. But I do not mean to say that every part of the actual field survey is necessary down to the 40-acre unit. That is usually only done when we get to the point of actual construction.

Mr. SINNOTT. Just what is the problem to be investigated if this appropriation were made?

Mr. GOODNER. All the points which have been made by Director Davis I will not review. I would rather discuss the statements made by General Goethals. In addition to the secondary storage problem which is expected to reduce the cost of the main line, further studies must be made as to the areas in Montana which would require water from above our diversion point, and the study of additional areas which might be developed, and also a more general and broad study of the economic phases involved as between a pumping project and a gravity project. To my mind that is the initial thing to be worked out.

Mr. SINNOTT. What is that last statement you made?

Mr. GOODNER. A broader study must be made as to the economic considerations which should govern whether we develop a gravity project or a pumping project, assuming them both to be feasible from an engineering standpoint.

Mr. WILLIAMSON. Did you have in mind the possible losses by reason of the development of the water power?

Mr. GOODNER. Yes, sir. Now, I would like to say that the recent report of the Super-Power Commission, covering a study of the New England and intervening areas as far south as this city, shows somewhere between five and eight million hydraulic horsepower actually used in that region.

Mr. RAKER. Is that a voluntary commission?

Mr. GOODNER. No; that was a Federal commission. Perhaps Director Davis can give you the exact title. I do not recall it. But the report was given out as the report on the superpower project. It was authorized by act of Congress during the war. Now, this entire industrial area uses between five and eight million horsepower. In the area on the map, taking the radius of 300 miles from the Columbia Basin project, the reports of the United States Geological Survey, water resources branch, show somewhere between ten and thirteen million available horsepower. Now, knowing that that horsepower is available for development in that area, which lacks many-fold having the development that the area in the superpower survey has, the State commission felt that there was no immediate necessity for it to make a detailed analysis of the effect of either project on the power situation. The question has been raised, and as Director Davis has well stated, it is a moot point as to the effect, some claiming one thing and some claiming another. But as a matter of economic development, one-half a million or a million horsepower in that particular area, which contains ten or thirteen million horsepower, with long distance electric transmission available, is not so important as the development of 2,000,000 acres of land, with no other water available for irrigation of that land than these two sources.

Now, answering the question that Mr. Sinnott asked regarding the effect on the Umatilla project, our diversion of 23,000 second-feet would come during the months of June, July, and part of August, during part of which time the Columbia River is usually in flood flow. The flow at the Umatilla rapids at that time might be anywhere from three-quarters of a million to a million second-feet and in some years much more than a million second-feet. Therefore the diversion above of 23,000 second-feet would not seriously deplete the power at that place. When the Columbia River gets down to the point of 50,000 second-feet it is in the dead of winter, at which time the Columbia Basin project would not be taking a single drop of water for any purpose.

We have investigated the Umatilla to the extent that, when the Columbia River flood is so great, I can not conceive of any power development using all that is remaining after our irrigation development is made.

Mr. SINNOTT. You would have no objection, however, to having that included in the report?

Mr. GOODNER. No, none whatever.

Mr. RAKER. I understood from General Goethals's statement that he was in a position to give his opinion as to the feasibility of this project, either gravity or pumping, gravity at Albany Falls or pumping at Grand Coulee, from the information furnished him in the surveys, but he was not in a position to give an opinion relative to the amount of water that could be accumulated and held in storage and turned loose at the proper time; that it would require further surveys of the Flathead and Pend Oreille Lakes. How is that? Did I get him wrong on that?

Mr. GOODNER. I did not understand him quite as you understand him. Perhaps that is because I am quite familiar with all of the details involved. I understood his answer in the light of all the knowledge that I knew he had concerning it, and his answer from an outside standpoint have conveyed to you the impression you have, but not to me.

Mr. RAKER. How could he give his opinion that either one of those points were feasible and were O. K., and he would put his O. K. on them, if it required a large amount of money for further survey?

Mr. GOODNER. Let me answer your question by a very homely illustration. For example, you have decided to build a \$100,000 house.

Mr. RAKER. Oh, no; I am not in that class.

Mr. GOODNER. You are undecided whether you want a slate roof or a tile roof or a shingle roof, which would make a difference of \$5,000, but it does not affect the consideration that such a house would be suitable for your needs. And similarly to that, on an expenditure of \$250,000,000 the substantial things are self-evident; they have been worked out. There may be variations of, say, \$50,000,000, but that does not affect the substantial thing, that it is a big, feasible, economically possible problem there, nor the fact that a development varying, say, \$5,000,000, for primary or secondary storage does not affect the substance of the project.

Mr. RAKER. But how could the General give his opinion as to the Grand Coulee project without a survey on which to base his opinion?

Mr. GOODNER. The General's answer was based on this. I would say: Assume that the dam site at Grand Coulee is feasible and the area to be irrigated is adequate, he is still of the opinion, as a matter of construction, that there is serious doubt as to the mechanical feasibility and operating cost.

Mr. SINNOTT. When did you say that you would withhold from the upper reaches of the Columbia River the 23,000 second-feet?

Mr. GOODNER. In the latter part of June, all of July, and the early part of August.

Mr. SINNOTT. That would be the summer flow?

Mr. GOODNER. Yes; the early summer flow.

Mr. SINNOTT. As I recall, at the Umatilla Rapids project, the summer available irrigation flow is about 120,000 second-feet. What were your figures? I think they are given in the report upon the Umatilla project.

Mr. GOODNER. I believe I stated that during the flood period the flow of the Columbia River would range from 750,000 to 1,000,000 second-feet.

Mr. RAKER. Is the Umatilla project still in process of construction on the river?

Mr. SINNOTT. No; they are agitating it.

Mr. RAKER. Is that project in process of construction on the Columbia River?

Mr. SINNOTT. There is the Umatilla project, which is near the Umatilla Rapids. They can get a fall in the river of between 35 and 70 feet. Is not that so, Mr. Davis?

Mr. DAVIS. I think so.

Mr. SINNOTT. They figure that they can develop some 300,000 or 400,000 horsepower, and they have a very small lift there. According to the figures that I have, during the summer flow, the irrigation season, there is about 120,000 second-feet at that point, and the people there propose to build a dam and develop power by using the water from the river. Senator McNary has a bill pending in the Senate now for the investigation of the canalization of the Columbia River.

Mr. RAKER. That is below the junction with the Snake River, the junction of the Snake River with the Columbia River.

Mr. SINNOTT. I have a similar bill pending in the House and I would like to have this committee investigate and report upon the effect of the diversion of the upper reaches upon the Umatilla project.

Mr. GOODNER. Following the flood months our demands would be drawn from the storage of flood waters which would ordinarily have run to waste during June and would have been surplus waste water at the Umatilla and at all points above. Our maintenance of the ordinary navigation flow of the Clarks Fork or Pend Oreille River, 7,000 second-feet, would continue practically the year round; it would certainly continue all through the summer season. Our withdrawal of water for the gravity project from any storage above would not seriously deplete the flow which would be passing the Umatilla point, because we would be drawing our surplus over the 7,000 navigation flow out of storage.

Mr. WEBSTER. At the last meeting of the committee the wish was expressed that there should be made a part of this hearing certain laws and decisions of the State of Washington. I have secured that data and I would like to ask permission to make a part of the hearings chapter 136 of the Session Laws of the State of Washington, 1919, being the proposed constitutional amendment as to the power of eminent domain.

I should also like to make a part of the hearings chapter 158 of the same session laws, an act known as the State reclamation act.

I should also like to make a part of the record chapter 188 of the same session laws, an act known as the land settlement act.

Mr. SINNOTT. How long are those acts, Judge?

Mr. WEBSTER. Some of them are of considerable length, but the proposed constitutional amendment is quite short. The other acts cover several pages. The State reclamation act covers about eight pages, and the land settlement act about four pages printed on both sides.

Mr. SINNOTT. Without objection they will go in the record.

Mr. WEBSTER. I should also like to make a part of the record an amendment to the land settlement act found in chapter 90 of the Session Laws of 1920 and 1921, the act amending section 4 of the land settlement act.

I should also like to make a part of the record the decision of the Supreme Court of the State of Washington filed on March 30, 1920, in the case of the State of Washington on the relation of the State Reclamation Board et al, plaintiff, v. E. W. Clausen, as State auditor, respondent, containing a discussion of the constitutional aspects of the land settlement act, reported in 110 Washington reports, page 525.

Mr. SINNOTT. That is the act that was requested the other day.

Mr. WEBSTER. Mr. Chairman, this concludes all of the evidence that we care to submit in connection with this bill, and I therefore commit it to the enlightened conscience and constructive statesmanship of the committee so far as I have anything to do with it.

(The papers submitted by Mr. Webster are inserted at the conclusion of the hearing.)

STATEMENT OF MR. A. P. DAVIS—Continued.

Mr. SUMMERS. Mr. Chairman, I would like to ask Mr. Davis one question, and that is whether the passage of this bill and the contemplated investigation would in any way interfere with the prosecution of the smaller projects throughout the West?

Mr. DAVIS. I see no possibility of such interference.

Mr. SUMMERS. Many of us are interested in the smaller projects as well as in the larger projects, and I thought it was well that we might have your views as director of that service.

Mr. DAVIS. On the contrary, Mr. Chairman, I think that the full investigation and decision regarding the wide scope and feasibility of the Columbia Basin project is important to determine the irrigation of some lands that might be irrigated by smaller projects. For example, if the Columbia Basin project should be definitely decided to be unfeasible, it would still be possible to irrigate a portion of that project from other sources. One portion south of Snake River can be irrigated from Snake River, and so can a portion by the use of the Wenatchee River. The original Palouse project might be revived. It is possible to construct small pumping plants on the Columbia River and irrigate small areas at various adjacent points.

That will be the character of development that may be carried out in the future in the larger project if not carried out. If the larger project is to be carried out it may not be wise to carry out some of these smaller projects, on account of the duplication at greater expense that would be involved per acre, for the small projects would cut the heart out of the big one before it is built. So that the policy regarding the development of the smaller project is dependent to some extent upon the policy to be adopted concerning the large ones. Whether or not it is to be definitely decided that this is feasible and will be built or decided to be unfeasible and turned down, either one would have a determining influence on the smaller projects.

Mr. LEATHERWOOD. Mr. Davis, may I ask you a question suggested by the gentleman from Washington? Are the funds available now by which new and feasible schemes of much smaller magnitude can be begun?

Mr. DAVIS. Can be begun? No, not in the Reclamation Service or anywhere else.

Mr. LEATHERWOOD. That is, new feasible schemes of any size can not be begun?

Mr. DAVIS. I will answer that in the way in which I have always answered congressional committees when that question has been brought up, that for the last 15 years at least the work under way by the Reclamation Service has been larger than was wise to be taken up with the funds in sight, and that is still the case.

Mr. LEATHERWOOD. I quite agree with you.

Mr. DAVIS. One of my principal jobs, and one of the most disagreeable ones that I have had in the past 10 years, has been to prevent the taking up of new projects before funds are available therefor.

Mr. LEATHERWOOD. If we can have additional funds provided for the reclamation fund in order to start a very small project, do you still think that the spending of money on these large national scope projects would not affect the beginning of a new scheme of small magnitude?

Mr. DAVIS. I do not think so, because nobody has suggested that the Columbia Basin project be built from reclamation funds. Those funds have not been adequate and will not be adequate for that purpose for many years. The reasons for these investigations are two: First, to determine what are the natural resources and how they should be handled in relation to the development of power on the Columbia River in such a way that it will not interfere with irrigation; second, to resolve the doubts concerning its feasibility as related to smaller projects in the same area that can be irrigated from other sources.

Mr. LEATHERWOOD. Am I safe in assuming, Mr. Davis, that without additional appropriations by Congress into the reclamation fund, it will be a long, long time before we can hope for any new projects?

Mr. DAVIS. Well, no; I would not say that. That is a very indefinite term.

Mr. LEATHERWOOD. Then I will say 20 years.

Mr. DAVIS. I would say a long time instead of a long, long time. That is dependent on the present state of the reclamation fund and its income. There are required now some seventy-five or eighty million dollars to complete the projects that have already

been taken up by the Reclamation Service. As the money comes in, if no others are taken up, that would require 10 or 12 years to complete those projects, and it would not be necessary to postpone taking up new projects that long. But as it happens, the projects have been taken up by one authority or another. We have kept ahead of the available funds to such an extent that the point at which a new project could be wisely taken up has not approached any closer in the last 10 years than it was 10 years ago.

Mr. LEATHERWOOD. Then if you say a long period instead of a long, long period, you might easily figure that a conservative estimate would be 15 years?

Mr. DAVIS. Oh, 5 or 10 years. I think we could finish all projects entirely in less than 10 years.

Mr. SUMMERS. How much is available for construction this year?

Mr. DAVIS. About seven or eight million dollars per annum.

Mr. SUMMERS. What has been the effect of the operation of the oil and gas leasing bill upon your revenues?

Mr. DAVIS. The receipts from the oil fund, which covers the royalty from oil development for the fiscal year 1920, were something over \$4,000,000. That included a lot of past production and some bonuses. For 1921 it was about a million dollars less, being something over \$3,000,000. For the next fiscal year they will be about \$4,000,000, according to computations. Then we have returns from the sale of public lands, about a million dollars a year.

Now, in stating these amounts that are available for construction, I do not include the amounts annually turned over for maintaining the projects, which amounts are large.

Mr. LEATHERWOOD. Is it or not a fact that some of the projects now under construction, or some that have been completed, are being practically doubled in capacity upon the theory of expansion of the original project?

Mr. DAVIS. There have been additions taken in, which were only tentatively considered at first, in a remote way, including the additional use of the waters of the same rivers by construction of further storage facilities, and the construction of further canals is being undertaken from time to time.

Mr. LEATHERWOOD. That is being done not as a new project but as an expansion of an old project?

Mr. DAVIS. Yes, sir.

Mr. LEATHERWOOD. And in some cases the expanded area is some distance from the original project?

Mr. DAVIS. I do not recall any case of that kind but that might possibly be so.

Mr. LEATHERWOOD. I have in mind the Minidoka project which has been rather liberally appropriated for.

Mr. DAVIS. The area that is being appropriated for by the Government is immediately adjoining the project. The construction of the American Falls reservoir and the irrigation of about 115,000 acres of land is in addition to the originally conceived project, that is true.

Mr. LEATHERWOOD. The bulk of the land is some distance from the original project?

Mr. DAVIS. It adjoins the Minidoka project as close as it is possible to put it.

Mr. LEATHERWOOD. That is, the two tracts are contiguous?

Mr. DAVIS. Yes; absolutely. I should say that all that has been done along that line has been done under the supervision of Congress. It has all been undertaken since Congress had a say as to where the money should be spent, and no concealment of facts has been made.

Mr. LEATHERWOOD. Is the line of contiguity of any considerable length between the two?

Mr. DAVIS. Oh, yes; it extends longitudinally through the tract. That is, a canal is built irrigating a portion of the land below it and another strip of land running along the entire length of the area is proposed above that tract.

Mr. LEATHERWOOD. I did not ask the question in any spirit of criticism.

Mr. DAVIS. Oh, I understand that.

Mr. LEATHERWOOD. But I was wondering how long these expansion schemes would consume the available money rather than the new projects.

Mr. DAVIS. It is true there has been considerable expansion. The development of the Snake River by large storage reservoirs is to be largely carried out by private funds. I think the Secretary in approving that proposition was largely influenced by that fact. There have been about 32 private companies from the irrigation districts and canal systems that have entered into a contract to pay in advance their proportion of the cost of the project. The United States is not supposed to put anything into it except its proportionate share for reclamation of public lands which are contiguous to the original project. While the American Falls reservoir has for many

years been considered as the key to the development of the Snake River, it was not in contemplation in the original conception of the Minidoka project. That is, it was not considered as a part of that project but it was contemplated that something should be done there sometime.

Mr. LEATHERWOOD. Are there any other contiguous tracts that may be made later a second addition to the Minidoka project?

Mr. DAVIS. There are other tracts of land that might be included by the construction of the American Falls reservoir at the capacity of which it is capable. They are not at the present time contemplated, although we are investigating them by money put up by the States and by private individuals, for the investigation of two tracts which would furnish sufficient water and as to which a choice would have to be made as to which would utilize sufficient water for that purpose.

Mr. RAKER. As I understand your answer to Mr. Leatherwood, you made a remark a while ago that you wanted a thorough investigation regarding the availability of water for irrigation which would apply to the Columbia Basin project. Now, is there any lack of funds or lack of investigations by the water power commission, when it starts out to have a project examined, to see whether or not they will grant the right to a power company to use the water at various points along the river?

Mr. DAVIS. I can not answer that question because it involves the intentions of other people about whose intentions I am not informed, but I can see how there might be a doubt in the minds of the Federal Power Commission as to whether or not certain permits should be granted. That is the only thing. A permit may be granted that would interfere with the proper development of the stream if it had no restrictions upon it, and at the same time it might be possible to grant that permit and not interfere with the stream. Now, the character and the amount of restrictions to put on are as important as the granting of the permit.

Mr. RAKER. Now, I was on that water-power committee for five months and I asked every witness that came before that committee whether or not it would permit development not only for power purposes but for irrigation, and you will find that every man that came before that committee, all the experts, Secretary Lane, and Secretary Baker, agreed that it would. At one time they secured in the bill the words "and irrigation." That was to determine the feasibility for power purposes and the feasibility for irrigation purposes, so that none of the uses for any particular locality would be overlooked.

Mr. ARENTZ. I think the thing of first importance in the arid West is to utilize the water regardless of the power, because the land is unlimited and the water is limited.

Mr. RAKER. That is true, and the water-power bill contains that provision, and all of the witnesses testified that that is one of the functions in that respect, that no claims would be turned down for irrigation if it is more valuable for irrigation than for power purposes.

Mr. ARENTZ. That seems to be the only thing that the Federal Power Commission should decide, whether the water is more valuable for irrigation or for power.

Mr. RAKER. That seems to be conceded, and I am going to ask Mr. Davis if, up to the present time, it has been his observation that either one of these uses has been overlooked so far as he knows?

Mr. DAVIS. No; as far as I know there has been no interference with irrigation by any license granted by the Federal Power Commission. They have undertaken a very wise policy to determine in what manner these waters may be utilized and the greatest uses that can be made for irrigation purposes. In the agreement which has been signed by the Colorado River Commission there is a proviso that power shall be forever subservient to irrigation, and that, the lawyers tell us—and it was so understood by the commission—would mean that any power development in the Colorado Basin is forever subservient to irrigation, and the water can be taken for irrigation without asking their permission and without condemnation or compensation of any kind.

Mr. RAKER. In other words, power projects can be authorized which would not interfere in any way at all with the water for irrigation purposes if the discharge is provided for at a proper location?

Mr. DAVIS. Yes, sir.

Mr. RAKER. And both uses can be made effective to the full extent of the water available?

Mr. DAVIS. That is very often the case; yes, sir.

Mr. RAKER. And that is what they are trying to do in this instance?

Mr. DAVIS. Yes, sir.

The CHAIRMAN. If there are no further questions, this concludes the hearing, and the committee will stand adjourned.

(Thereupon, at 12.10 o'clock p. m., the committee adjourned.)

[Session Laws, 1921, State of Washington. Chapter 90. (S. B. 227.) Land settlement.]

AN ACT Relating to the upbuilding of the agricultural resources of the State, establishing and defining a State policy for land settlement, amending section 4, chapter 188, Laws of 1919, adding a new section to said chapter 188, to be known as section 11, and providing penalties for violations thereof.

Be it enacted by the Legislature of the State of Washington:

SECTION 1. That section 4 of chapter 188, Laws of 1919, be amended to read as follows:

"SEC. 4. The board shall have power:

"To investigate and select for settlement suitable areas of undeveloped lands in this State available for settlement.

"To purchase and acquire on behalf of the State such privately owned lands as in its judgment are available for settlement, whenever the same shall be within the limits of an approved project and after full investigation and official approval thereof.

"To subdivide any lands owned by the State and found available for settlement, including lands purchased or acquired for that purpose, into tracts suitable for farms and farm laborer's allotments.

"To make on any such farms and farm laborer's allotments such improvements as may be necessary to render the same habitable and productive.

"To accept from private owners deeds or other instruments of trust relating to land and to subdivide, improve, and sell such lands.

"To lease to prospective settlers any land selected by the board of settlement.

"To dedicate to public use appropriate tracts for roads, schoolhouses, or other public purposes.

"To purchase and acquire under state laws any state, school or granted lands of the State which the board shall determine are available for settlement under the provisions of this act, whenever the same shall be within the limits of an approved project and after full investigation and official approval thereof.

"To purchase and acquire lands in cooperation with the United States under such conditions as may be deemed advisable for the purposes of this act, and to convey the same under such conditions and restrictions as may be approved by the Secretary of the Interior.

"To arrange with the Federal Government for sharing in the expense of furnishing agricultural training for settlers so as to render them better qualified for the cultivation of their lands, under appropriate conditions of supervision by the Federal Government.

"To sell and convey such improved farms and farm laborer's allotments subject to the limitations of this act.

"To make such rules and regulations and perform any and all acts as may be necessary and proper for the purpose of carrying out the provisions of this act.

"If it shall appear that Federal aid and cooperation shall not be available, or the board shall determine to adopt and proceed with any land settlement project without Federal aid and cooperation, then and in such event the board may acquire lands for such land settlement project and conduct their settlement with moneys from the State reclamation fund appropriated for land settlement purposes.

"The board shall have power and it shall be its duty, upon request of any land settlement or colonization company operating in the State of Washington, to make, or cause to be made, a careful examination and, providing investigation warrants, to certify to the following conditions in reference to said company and its project:

"(1) That the land is suitable to agricultural purposes and in passing upon this feature it shall first procure a report from the Washington State College and make such further investigations as the board deems advisable.

"(2) That its location in reference to markets, public roads, and transportation facilities makes it suitable for colonization purposes.

"(3) That the proposed plan of settlement and colonization is in the interest of the settlers and especially in reference to the following points:

"(a) The price at which the land is proposed to be sold.

"(b) The aid to be rendered the settlers in improving the same.

"(c) The rate of interest to be charged and the length of time within which payments are to be made.

"(4) That provision is made for deferred payments on the amortization plan maturing in not less than 20 years.

"The expense incurred in making such examination and certification shall be paid by the applicant therefor.

"Before any such certificate is issued such settlement and colonization company shall fully satisfy the board that it is able to and will faithfully carry out its plan of settlement and colonization and all contracts entered into with settlers.

"Whenever any such certificate shall be issued it shall be lawful for such settlement and colonization company to advertise the fact that its plan of settlement and colonization has been approved by the State of Washington.

"It shall be unlawful for any person, firm, or corporation to claim, represent, advertise, or hold out in any manner that the board has issued to him or it any such certificate mentioned in section 1 of this act, unless such certificate has actually been so issued and unless such person, firm, or corporation shall have fully complied with, and is complying with, such certificate and the terms and conditions therein prescribed and the rules and regulations of said board."

SEC. 2. That there be added to chapter 188, Laws of 1919, a new section to be known as section 11, to read as follows:

"SEC. 11. Any person, firm or corporation who shall violate any of the provisions of this act shall be guilty of a gross misdemeanor."

Passed by the senate March 3, 1921.

Passed by the house March 7, 1921.

Approved by the governor March 16, 1921.

[Laws of 1919. State of Washington. Chapter 136. (S. B. 257.) Proposed constitutional amendment as to power of eminent domain.]

AN ACT Providing for the amendment of section 16 of article 1 of the constitution of the State of Washington, relating to eminent domain.

Be it enacted by the Legislature of the State of Washington:

SECTION 1. That at the general election to be held in this State on the Tuesday next succeeding the first Monday in November, 1920, there shall be submitted to the qualified electors of the State, for their adoption and approval or rejection, an amendment to section 16 of article 1 of the constitution of the State of Washington, so that the same shall when amended, read as follows:

"SEC. 16. Private property shall not be taken for private use, except for private ways of necessity, and for drains, flumes, or ditches on or across the lands of others for agricultural, domestic, or sanitary purposes. No private property shall be taken or damaged for public or private use without just compensation having been first made, or paid into court for the owner, and no right of way shall be appropriated to the use of any corporation other than municipal until full compensation therefor be first made in money, or ascertained and paid into court for the owner, irrespective of any benefit from any improvement proposed by such corporation, which compensation shall be ascertained by a jury, unless a jury be waived, as in other civil cases in courts of record, in the manner prescribed by law. Whenever an attempt is made to take private property for a use alleged to be public, the question whether the contemplated use be really public shall be a judicial question, and determined as such, without regard to any legislative assertion that the use is public: *Provided*, That the taking of private property by the State for land reclamation and settlement purposes is hereby declared to be for public use."

Passed by the senate March 8, 1919.

Passed by the house March 11, 1919.

Approved by the governor March 17, 1919.

[Laws of 1919. State of Washington. Chapter 158. (H. B. 200.) State reclamation act.]

AN ACT Providing for the development of the agricultural resources of the State and the reclamation of arid, swamp, overflow, and logged-off lands, establishing a State reclamation revolving fund, and providing for tax levies to produce revenues therefor, creating a State reclamation board and defining its powers and duties, conferring certain powers upon districts organized for the reclamation of lands, and making appropriations.

Be it enacted by the Legislature of the State of Washington:

SECTION 1. This act shall be known and cited as the "State reclamation act."

SEC. 2. The object of this act is to provide for the reclamation and development of such of the arid, swamp, overflow, and logged-off lands in the State of Washington as shall be determined to be suitable and economically available for reclamation and development as agricultural lands, and the State of Washington in the exercise of its sovereign and police powers declares the reclamation of such lands to be a State purpose and necessary to the public health, safety, and welfare of its people. For that purpose there shall be and hereby is established a department of State government to be known as "The State Reclamation Service of Washington," which shall

consist of the State reclamation board and such field experts and other assistants and employes as the board shall from time to time deem necessary.

SEC. 3. The State reclamation board, hereinafter called the board, shall consist of five commissioners—the State commissioner of public lands, the State treasurer, the State hydraulic engineer, the State commissioner of agriculture, and the president of the State College of Washington, ex officio.

The board shall, on its organization and biennially thereafter on the 1st day of April, elect from among its members a chairman and a secretary, and shall maintain offices at the State capital and hold such regular and special meetings as the business of the department shall require, and keep a record of its proceedings, and may from time to time adopt rules and regulations for the transaction of its business. Three members of the board shall constitute a quorum, and may exercise all the power and authority conferred on the board. The attorney general shall be the legal advisor of the board. The members of the board shall receive no compensation for services rendered as members, but shall be reimbursed for their actual and necessary expenses incurred in the performance of their duties as members of the board, to be paid from the moneys appropriated for the administrative expenses of the board.

SEC. 4. For the purpose of carrying out the provisions of this act there is hereby created in the State treasury a State reclamation revolving fund, hereinafter called the reclamation fund, which shall consist of all sums that may from time to time be appropriated thereto by the legislature from other funds in the State treasury; all gifts, donations, bequests, and devises, made to the State therefor, and the proceeds of the sale thereof; the proceeds of the sale or redemption of and the interest earned by securities purchased or acquired with the moneys thereof; all reimbursements for moneys advanced for the payment of assessments on State, school, granted and other public lands for the improvements thereof, as hereinafter provided; and all taxes received under levies authorized by the legislature therefor.

Whenever the total amount in the reclamation fund, including cash on hand, market value of property, and par value and accrued interest of securities owned, reimbursements due or to become due for moneys advanced for the improvement of State, school, granted, and other public lands, and all uncollected taxes, including the current levy, less all outstanding warrants drawn against such fund, shall equal \$5,000,000, all taxes from future levies authorized by this act made therefor shall be paid over to the respective funds in the State treasury from which moneys have been appropriated for the reclamation fund, until such funds are reimbursed for all sums so appropriated.

From the moneys appropriated from the reclamation fund there shall be paid, upon vouchers approved by the board and signed and attested by the chairman and secretary, the administrative expenses of the board and such amounts as shall be found necessary or expedient for the investigation and survey of reclamation projects proposed to be financed in whole or in part by the board, and such amounts as may be authorized by the board for the reclamation of logged-off lands and for the reclamation of lands of diking, drainage, diking and drainage, and irrigation districts duly and regularly organized under the laws of this State, and such other districts as shall from time to time be authorized by law for the reclamation or development of waste or undeveloped lands, and all of the respective districts hereinabove referred to shall, for the purposes of this act, be known and designated herein as reclamation districts.

SEC. 5. In carrying out the purposes of this act the board shall be authorized and empowered:

To make surveys and investigations of the unreclaimed and undeveloped lands in this State and to determine the relative agricultural values, productiveness and uses, and the feasibility and cost of reclamation and development thereof.

To formulate and adopt a sound policy for the reclamation and development of the undeveloped agricultural resources of the State and from time to time select for reclamation and development such lands as may be deemed advisable, and the board may in its discretion advise as to the formation and assist in the organization of reclamation districts under the laws of this State.

To purchase the bonds of any reclamation district whose project is approved by the board and which is found to be upon a sound financial basis and to contract with any such district for making surveys and furnishing engineering plans and supervision for the construction of its project and to accept the bonds of such district in payment therefor and to expend the moneys appropriated from the reclamation fund in the purchase of such bonds or in carrying out such contracts.

To sell and dispose of any reclamation district bonds acquired by the board at public or private sale and to pay the proceeds of such sale into the reclamation fund: *Provided*, That such bonds shall not be sold for less than the purchase price plus accrued interest.

To, whenever it shall deem it advisable, require any district with which it may contract, to provide such safeguards as it may deem necessary to assure bona fide settlement and development of the lands within such district, by securing from the owners of lands therein agreements to limit the amount of their holdings to such acreage as they can properly farm and to sell their excess land holdings at reasonable prices.

To clear and reclaim logged-off lands in the manner hereinafter in this act provided.

To employ all necessary experts, assistants, and employees and fix their compensation and to enter into any and all contracts and agreements necessary to carry out the purposes of this act.

To have the assistance, cooperation, and services of, and the use of the records and files in, all the departments and institutions of the State, particularly the office of the commissioner of public lands, the State department of agriculture, the office of the State hydraulic engineer, the bureau of farm development, the bureau of statistics, agriculture, and immigration, the State College of Washington, and the University of Washington; and all State officers and the governing authorities of all State institutions are hereby authorized and directed to cooperate with the board in furthering the purposes of this act.

To cooperate with the United States in any plan of land reclamation or land settlement or agricultural development which the Congress of the United States may provide and which may affect the development of agricultural resources within the State of Washington, or the settlement of soldiers, sailors, and other worthy persons, on the agricultural lands within this State, and the board shall have full power to carry out the provisions of any cooperative land settlement act that may be enacted by the United States.

The board shall prepare and report to the legislature, at the commencement of each biennial session, a full statement of its operations and recommendations.

SEC. 6. The board shall have the power to cooperate and to contract with the United States for the reclamation of arid, swamp, overflow, or logged-off lands in this State by the board or by the United States, and shall have the power to contract with the United States for the handling of such reclamation work by the United States and for the repayment of such moneys as the board shall invest from the reclamation fund, under such terms and conditions as the United States laws and the regulations of the Interior Department shall provide for the repayment of reclamation costs by the lands reclaimed.

SEC. 7. Every diking, drainage, diking and drainage, and irrigation district duly and regularly organized under the laws of this State, or such other district as shall hereafter be authorized by law and organized for the reclamation or development of waste or undeveloped lands, shall be and is hereby authorized and empowered to enter into all contracts with the reclamation board for the reclamation of the lands of such district in the manner provided in this act, or such manner as such districts are now authorized by law to contract with the United States or with individuals or corporations, for the making of surveys and furnishing engineering plans and supervision for the construction of, or for the construction of, all works and improvements necessary for the reclamation of its lands, and for the sale or delivery of its bonds.

SEC. 8. Whenever in the judgment of the commissioner of public lands any State, school, granted, or other public lands of the State will be specially benefited by any proposed reclamation project approved by the board, he may consent that such lands be included in any reclamation district organized for the purpose of carrying out such reclamation project, and in that event the reclamation board shall be authorized to pay, out of the current appropriations from the reclamation fund, the district assessments levied as provided by law against such lands, and any such assessments paid shall be made a charge against the lands upon which they were levied, and the amount thereof, but without interest, shall be added to the appraised value and included in the sale price of such lands when sold, and the State treasurer shall, upon the certificate of the State land commissioner, credit such amount of the proceeds of the sale, when received, to the reclamation fund.

SEC. 9. Whenever the commissioner of public lands shall believe that any tract of cut-over forest or logged-off State, school, granted, or other public lands of the State, is of such quality and so situated that it may be profitably cleared and made ready for cultivation for agricultural purposes under the provisions of this act, he may request the State reclamation board to make a survey and investigation thereof and to determine the cost of clearing the same and whether such clearing will increase the value of the land sufficiently to warrant the expense.

SEC. 10. Upon the filing of such request by the Commissioner of Public Lands the board may in its discretion cause a survey and investigation of the lands described

in the request to be made, and determine whether the land is of such character and so situated that it can be profitably cleared and made ready for cultivation for agricultural purposes under the provisions of this act. In making such determination the board shall take into consideration: (a) The character and quantity of stumps and debris on the land and the cost of removing and destroying the same; and (b) the character of the soil, its depth and fertility, the number and kinds of crops to which it is adapted, the local climatic conditions, the local annual rainfall, the water supply upon the land, the drainage, the number and extent of the markets accessible, the distance and means of transportation to market, the amount of similar land already under cultivation and accessible to the same market or markets, and the ordinary margin of profit per acre between the cost of production and the market price of the various crops to which the land is adapted.

Upon completion of the investigation the board shall make a detailed report of its findings and furnish a copy thereof to the commissioner of public lands and such report shall be kept on file for the information of the board and the commissioner and shall be open to public inspection.

SEC. 11. If the board shall determine that the State lands investigated as provided in the preceding section can be profitably cleared and made ready for cultivation and sold at an advanced price sufficient to cover the cost of clearing, it may cause the same to be cleared and pay the cost of such clearing out of the moneys appropriated from the reclamation fund for the reclamation of lands, and the cost of such clearing shall be made a charge against the lands cleared and included in the sale price thereof when sold, and such lands may be sold upon such terms as to deferred payments, including the cost of clearing, as is provided by law for the sale of State, school, granted, or other public lands of the State.

SEC. 12. For the purpose of raising revenue for the carrying out of the provisions of this act, the State board of equalization shall, beginning the fiscal year of 1919, and annually thereafter, at the time of levying taxes for State purposes, levy upon all property subject to taxation, and the proper officers shall collect, a tax of one-half of 1 mill. The revenue so raised shall be paid into the State treasury and credited to the State reclamation revolving fund.

SEC. 13. There is hereby appropriated out of the general fund in the State treasury into the State reclamation revolving fund the sum of \$100,000; for the purpose of making surveys and investigations of unclaimed and undeveloped lands in this State and for general administrative expenses of the State reclamation board there is hereby appropriated out of the State reclamation revolving fund the sum of \$50,000, or so much thereof as may be necessary; for the purpose of carrying out the provisions of this act relating to the purchase of the bonds of reclamation districts, the performance of contracts made with such districts, the payment of reclamation district assessments levied against the lands of the State, and the payment of the cost of clearing logged-off lands of the State, there is hereby appropriated out of the State reclamation revolving fund the sum of \$1,000,000 or so much thereof as may be necessary: *Provided*, That no warrant shall be drawn upon the State reclamation revolving fund in excess of the amount in the State treasury to the credit of said fund.

SEC. 14. If any section or provision of this act shall be adjudged to be invalid or unconstitutional, such adjudication shall not affect the validity of the act as a whole or any section, provision, or part thereof not adjudged invalid or unconstitutional.

SEC. 15. This act is necessary for the immediate preservation of the public peace, health, and safety and shall take effect immediately.

Passed the house March 6, 1919.

Passed the senate March 11, 1919.

Approved by the governor March 18, 1919.

[Laws of 1919. State of Washington. Chapter 188. (S. B. 184.) Land settlement act.]

AN ACT Relating to the upbuilding of the agricultural resources of the State, establishing a State policy for land settlement, defining the powers and duties of the State reclamation board in reference thereto, and making appropriations therefor.

Be it enacted by the Legislature of the State of Washington:

SECTION 1. This act shall be known and cited as the "land settlement act."

SEC. 2. The State of Washington in the exercise of its sovereign and police powers declares that the settlement of such portions of the undeveloped lands in this State as may be determined to be suitable and economically available therefor is a State purpose and is necessary to the public health, safety, and welfare of its people. In the exercise of such power the State, acting for itself and in cooperation with the

United States, hereby establishes a definite land policy providing means whereby soldiers, sailors, marines, and others who have served with the armed forces of the United States in the war against Germany and her allies, or other wars of the United States, hereinafter generally referred to as "soldiers," and also industrial workers and other American citizens desiring a rural life, may settle upon and become owners of small improved farms and farm laborer's allotments.

SEC. 3. That the State reclamation board created by the sixteenth legislature, hereinafter called the "board," shall have power to cooperate with the Federal Government in the settlement of any undeveloped lands in this State, and to avail itself of any authority of Federal laws, rules, and regulations therefor when any such settlement project shall be approved and adopted by both the Federal Government and said board. Before said board shall expend any of the moneys appropriated for the settlement of land, except as herein otherwise provided, it shall enter into a written agreement with the Federal Government, setting forth the plan and basis of cooperation between the State and the Federal Government, and the expenditures to be incurred by each, and the provision for their repayment.

The contract with the United States may provide for the subdivision of the lands and other work needed to render one or more groups of farms available for agriculture.

The board is authorized to secure from the United States, subject to the provisions of Federal laws, the necessary funds for making permanent improvements and for the purchase of necessary equipment.

SEC. 4. The board shall have power:

To investigate and select for settlement suitable areas of undeveloped lands in this State available for settlement.

To purchase and acquire on behalf of the State such privately owned lands as in its judgment are available for settlement.

To subdivide any lands owned by the State and found available for settlement, including lands purchased or acquired for that purpose, into tracts suitable for farms and farm laborer's allotments.

To make on any such farms and farm laborer's allotments such improvements as may be necessary to render the same habitable and productive.

To accept from private owners deeds or other instruments of trust relating to land and to subdivide, improve, and sell such lands.

To lease to prospective settlers any land selected by the board for settlement.

To dedicate to public use appropriate tracts for roads, schoolhouses, or other public purposes.

To purchase and acquire under State laws any State, school, or granted lands of the State which the board shall determine are available for settlement under the provisions of this act.

To purchase and acquire lands in cooperation with the United States under such conditions as may be deemed advisable for the purposes of this act, and to convey the same under such conditions and restrictions as may be approved by the Secretary of the Interior.

To arrange with the Federal Government for sharing in the expense of furnishing agricultural training for settlers so as to render them better qualified for the cultivation of their lands, under appropriate conditions of supervision by the Federal Government.

To sell and convey such improved farms and farm laborer's allotments subject to the limitations of this act.

To make such rules and regulations and perform any and all acts as may be necessary and proper for the purpose of carrying out the provisions of this act.

If it shall appear that Federal aid and cooperation shall not be available, or the board shall determine to adopt and proceed with any land settlement project without Federal aid and cooperation, then and in such event the board may acquire lands for such land settlement project and conduct their settlement with moneys from the State reclamation fund.

SEC. 5. That the board shall give to soldiers the preference right to purchase or lease such farms and farm laborer's allotments.

A qualified applicant must be a citizen of the United States and must satisfy the board that he is not the holder of agricultural land or possessory rights therein which, together with the land and improvements to be purchased hereunder, shall exceed a value of \$15,000. No purchaser shall at any one time hold more than one farm or farm laborer's allotment. Every purchaser shall satisfy the board as to his fitness, both financial and otherwise, to cultivate and develop the same successfully.

Each approved applicant shall enter into a contract of purchase which shall provide for the payment of the purchase price of the land, the reclamation costs, and the farm improvements and other charges, if any, and shall require the purchaser actually to

occupy the land within six months and actually to reside thereon for at least eight months in each calendar year for a period of at least five years, unless prevented by illness or other cause satisfactory to the board; and other absence from the land exceeding four months in any calendar year shall be a breach of the contract.

The contract shall provide that it shall not be assigned without the consent of the board.

The purchase price of the land shall be paid in annual installments to be fixed by the board for a total period of not to exceed 40 years, with interest on deferred payments from the date of the contract at the rate of 4 per cent per annum.

Title to the land shall not pass until full payment has been made for the land and improvements.

SEC. 6. The lands disposed of under this act shall be leased or sold, in accordance with regulations adopted by the board, after public notice in at least one newspaper published in the State and of general circulation therein, and one newspaper published in the county where the land is situated, once a week for five consecutive weeks, the first date of publication being at least 60 days prior to the date of lease or sale, setting forth generally the location of the land and the terms of lease or sale and stating that detailed information can be obtained at the office of the board, and such other convenient places as are designated in the notice.

SEC. 7. That the board shall investigate land settlement conditions in other States and elsewhere. The board shall report biennially to the legislature, giving a full statement of its operations and recommendations under the provisions of this act, and shall furnish a copy of its report to the secretary of the interior.

SEC. 8. For the purpose of carrying out the provisions of this act relating to acquiring lands and improving the lands of the State, and the lands acquired or taken in trust under the provisions of this act, there is hereby appropriated out of the State reclamation revolving fund the sum of \$150,000, or so much thereof as may be necessary: for the administrative expenses of the board in carrying out the provisions of this act there is hereby appropriated out of the general fund the sum of \$10,000, or so much thereof as may be necessary: *Provided*, That no warrant shall be drawn upon the State reclamation revolving fund in excess of the amount in the State treasury to the credit of said fund.

SEC. 9. If any part of this act shall be adjudged to be invalid or unconstitutional, such adjudication shall not affect the validity or constitutionality of the act as a whole, or of the part thereof not adjudged invalid or unconstitutional.

SEC. 10. This act is necessary for the immediate preservation of the public peace, health, and safety, and shall take effect immediately.

Passed the senate March 8, 1919.

Passed the house March 11, 1919.

Approved by the governor March 20, 1919.

(No. 15620. En Banc. March 30, 1920.) The State of Washington, on the relation of the State reclamation board et al., plaintiff, *v.* C. W. Clausen, as State auditor, respondent.

Taxation (5)—Restrictions—Public purpose.—No funds can be raised by taxation except for a public purpose.

Constitutional law (3)—Rule of construction.—A statute will not be declared unconstitutional unless it clearly so appears, and this rule is peculiarly applicable to an act authorizing the levy of a tax for a public purpose.

Taxation (5)—Restrictions—Public purpose—Land development act.—The land settlement act, Laws 1919, page 583, authorizing the raising of funds by taxation for the purchase, improvement, and settlement of undeveloped agricultural lands, to be disposed of by the State to private individuals, is not unconstitutional as levying a tax for other than a public purpose, the legislature, by the act, having decided that it was a public purpose.

Constitutional law (103, 104)—Discrimination—Land development act.—The land settlement act, Laws 1919, page 583, for the development of agricultural lands to be purchased, improved, and sold by the State, is not unconstitutional in that it discriminates in favor of agricultural lands.

Same (100, 102)—Privileges and immunities—Preference rights to soldiers.—The land settlement act, Laws 1919, page 583, for the development of agricultural lands, giving soldiers a preference right of purchase, does not violate the equal privileges and immunity guaranty of the constitution.

Same (129)—Due process—Taxation—Public purpose.—Since the land settlement act, Laws 1919, page 583, does not provide for a tax for other than a public purpose, it

does not violate the due process clause of the fourteenth amendment to the Federal Constitution.

Mackintosh and Mount, JJ., dissent.

Application filed in the supreme court November 4, 1919, for a writ of mandamus to compel the State auditor to issue a warrant to relator in payment for land purchased by the State reclamation board under the land settlement act. Granted.

The attorney general and Glenn J. Fairbrook, assistant, for relators.

Frank C. Owings for respondent.

Parker, J.—This is an original mandamus proceeding in this court wherein the relators seek a writ of mandate to compel the State auditor to issue a warrant against the State reclamation revolving fund to the relator, George J. Hurley, in payment for 160 acres of land purchased from him by the State reclamation board under the land settlement act, Laws of 1919, chapter 188, page 583. The auditor has refused to issue the warrant as demanded of him, basing his refusal upon the sole ground that the land settlement act is unconstitutional.

To the end that we have clearly before us the full purpose and scope of the land settlement act, we deem it desirable at the outset to here quote the larger portion of it, as follows:

AN ACT Relating to the upbuilding of the agricultural resources of the State, establishing a State policy for land settlement, defining the powers and duties of the State reclamation board in reference thereto, and making appropriations therefor.

Be it enacted by the Legislature of the State of Washington:

SECTION 1. This act shall be known and cited as the "land settlement act."

SEC. 2. The State of Washington in the exercise of its sovereign and police powers declares that the settlement of such portions of the undeveloped lands in this State as may be determined to be suitable and economically available therefor is a State purpose and is necessary to the public health, safety, and welfare of its people. In the exercise of such power the State, acting for itself and in cooperation with the United States, hereby establishes a definite land policy providing means whereby soldiers, sailors, marines, and others who have served with the armed forces of the United States in the war against Germany and her allies, or other wars of the United States, hereinafter generally referred to as "soldiers," and also industrial workers and other American citizens desiring a rural life, may settle upon and become owners of small improved farms and farm laborer's allotments.

SEC. 3. That the State reclamation board created by the sixteenth legislature, hereinafter called the "board," shall have power to cooperate with the Federal Government in the settlement of any undeveloped lands in this State.

* * * * *

SEC. 4. The board shall have power:

To investigate and select for settlement suitable areas of undeveloped lands in this State available for settlement.

To purchase and acquire on behalf of the State such privately owned lands as in its judgment are available for settlement.

To subdivide any lands owned by the State and found available for settlement, including lands purchased or acquired for that purpose, into tracts suitable for farms and farm laborer's allotments.

To make on any such farms and farm laborer's allotments such improvements as may be necessary to render the same habitable and productive.

To accept from private owners deeds or other instruments of trust relating to land and to subdivide, improve, and sell such lands.

To lease to prospective settlers any land selected by the board for settlement.

To dedicate to public use appropriate tracts for roads, schoolhouses, or other public purposes.

To purchase and acquire under State laws any State, school, or granted lands of the State which the board shall determine are available for settlement under the provisions of this act.

To purchase and acquire lands in cooperation with the United States under such conditions as may be deemed advisable for the purposes of this act, and to convey the same under such conditions and restrictions as may be approved by the Secretary of the Interior.

To arrange with the Federal Government for sharing in the expense of furnishing agricultural training for settlers so as to render them better qualified for the cultivation of their lands, under appropriate conditions of supervision by the Federal Government.

To sell and convey such improved farms and farm laborer's allotments subject to the limitations of this act.

To make such rules and regulations and perform any and all acts as may be necessary and proper for the purpose of carrying out the provisions of this act. * * *

SEC. 5. That the board shall give to soldiers the preference right to purchase or lease such farms and farm laborer's allotments.

A qualified applicant must be a citizen of the United States and must satisfy the board that he is not the holder of agricultural land or possessory rights therein which, together with the land and improvements to be purchased hereunder, shall exceed a value of \$15,000. No purchaser shall at any one time hold more than one farm or farm laborer's allotment. Every purchaser shall satisfy the board as to his fitness, both financial and otherwise, to cultivate and develop the same successfully.

Each approved applicant shall enter into a contract of purchase which shall provide for the payment of the purchase price of the land, the reclamation costs and the farm improvements and other charges, if any, and shall require the purchaser actually to occupy the land within six months and actually to reside thereon for at least eight months in each calendar year for a period of at least five years, unless prevented by illness or other cause satisfactory to the board; and other absence from the land exceeding four months in any calendar year shall be a breach of the contract.

The contract shall provide that it shall not be assigned without the consent of the board.

The purchase price of the land shall be paid in annual installments to be fixed by the board for a total period of not to exceed 40 years, with interest on deferred payments from the date of the contract at the rate of 4 per cent per annum.

Title to the land shall not pass until full payment has been made for the land and improvements.

SEC. 6. The lands disposed of under this act shall be leased or sold, in accordance with regulations adopted by the board, after public notice in at least one newspaper published in the State and of general circulation therein, and one newspaper published in the county where the land is situated, once a week for five consecutive weeks, the first date of publication being at least 60 days prior to the date of lease or sale, setting forth generally the location of the land and the terms of lease or sale and stating that detailed information can be obtained at the office of the board and such other convenient places as are designated in the notice.

* * * * *

SEC. 8. For the purpose of carrying out the provisions of this act relating to acquiring lands and improving the lands of the State, and the lands acquired or taken in trust under the provisions of this act, there is hereby appropriated out of the State reclamation revolving fund the sum of \$150,000, or so much thereof as may be necessary, for the administrative expenses of the board in carrying out the provisions of this act there is hereby appropriated out of the general fund the sum of \$10,000, or so much thereof as may be necessary: *Provided*, That no warrant shall be drawn upon the State reclamation revolving fund in excess of the amount in the State treasury to the credit of said fund.

SEC. 9. If any part of this act shall be adjudged to be invalid or unconstitutional, such adjudication shall not affect the validity or constitutionality of the act as a whole, or of the part thereof not adjudged invalid or unconstitutional. * * *

The State reclamation act, Laws of 1919, chapter 158, page 442, provides for the composition and organization of the State reclamation board mentioned in the above-quoted portion of section 3 of the land settlement act. The State reclamation act also renders it plain that the State reclamation revolving fund from which the appropriation made by the above-quoted section 8 is, and is to become, largely, if not wholly, the product of taxes levied and to be levied upon all property in the State subject to taxation in the same manner as the State general taxes are levied. In view of the express provisions of section 9 above quoted, we need only concern ourselves in this case with the question of the constitutionality of the act in so far as it authorizes the expenditure of public funds raised by taxation in the purchase by the reclamation board of land to be subdivided, improved, and disposed of as provided by the terms of the act, since we do not understand the contention here made in support of the auditor's refusal to issue the warrant as demanded of him to be rested upon any other grounds of unconstitutionality than that the act, in so far as it authorizes the expenditure of public funds raised by taxation, is in excess of legislative constitutional power and that it is in effect an exercise of the power to tax and to expend public funds so raised for a purpose not public but private—that is, for a purpose not governmental in the sense that such purpose is not a legitimate function of government.

We must of course proceed with our inquiry, having in view the elementary principle that a tax can be lawfully levied and the public funds so raised lawfully expended only for a public purpose. The learned author, Gray, in his work entitled "Limitations on Taxing Power," sections 169, 170, well states this elementary principle as follows:

"In all the definitions of taxation and taxes, one element appears most prominently, to wit, the necessity for a public purpose to justify the exercise of the taxing power. No principle of law is better established than this: That taxes can only be laid for public purposes; and that a tax laid for a private purpose or to bestow some private benefit upon some individual or individuals is void, regardless of the absence of express constitutional prohibitions. * * *

"This limitation upon the taxing power is based upon and derived from the inherent purposes of the State as a social organization."

The following authorities, and many others which might be cited, leave no room to doubt this as being a settled rule of American jurisprudence: Judson, *Taxation* (2d ed.), section 376; Cooley, *Taxation* (3d ed.), page 181. The guaranty of section 3, article 1, of our State constitution that "no person shall be deprived of life, liberty, or property without due process of law," and the like guaranty of the fourteenth amendment to the Constitution of the United States, are manifestly all that this principle needs to rest upon.

Our problem, then, is reduced to this, is the raising of funds by taxation and the expenditure thereof for the purchase of land to the end that it be subdivided, improved, and disposed of as by the terms of this act provided, the exercise of the power of taxation and the expenditure of public funds for a public purpose? It may well be doubted that there has ever come to the American courts any more vexatious question than that of determining whether or not a particular purpose for which public funds were sought to be raised by taxation and expended is a public purpose, when the particular purpose in question lay within that twilight zone wherein the minds may reasonably differ as to such purpose being a public one; the bounds of which zone are ever changing with the passing of time, and within which new problems of public welfare always first appear. That such a question, when arising in the courts, has proven so vexatious is, we apprehend, because of its inherent nature, in that, in its last analysis, it is not one of exclusive legal logic, but is one more or less of policy and wisdom, properly determinable in the light of public welfare, present and future, in a broad sense; and hence is not a pure judicial law question, except in those cases clearly outside of the twilight zone we have alluded to.

Some 50 years ago it became a much-debated question in this country as to whether or not the levying of a tax and the expenditure of public funds raised thereby for the purpose of construction or to aid in the construction of a railroad in a State or a community of the people so taxed was the exercise of the taxing power and the expenditure of public money for a public purpose. Different State courts, the judges of which were counted of eminent legal learning, even in a time of great judges and great lawyers, entertained opposing views upon this question. Touching the real nature of the question and recognizing that it lies very close to that line of uncertain location dividing judicial from legislative functions, in a decision holding that such purpose was public, or rather that the court could not say that it was not public when the legislature authorizing the levy of the tax for the purposes had, in effect, determined that it was public, Justice Ladd, speaking for the New Hampshire court, in *Perry v. Keene* (56 N. H. 514, 531), said:

"Where is the line that divides the province of the court from that of the legislature in a matter of this sort? The court is to expound and administer the laws, and there the judicial function and duty end. How much of the question, whether a given object is public, lies within the province of the law, and how much in the domain of political science and statesmanship? When the judge has declared all the law that enters into the problem, how much is still left to the determination of the legislator? Admitting, as has indeed been more than intimated in this State (*Concord Railroad v. Greeley*, 17 N. H. 57), that it is for the court finally to determine whether the use is public, what is the criterion? What are the rules which the law furnishes to the court wherewith to eliminate a true answer to the inquiry? In what respect does the question as presented to the court differ from the same question as presented to the legislature? If the courts stop when they reach the borders of legislative ground, how far can they proceed?

"If the legislature should take the property of A, or the property of all the taxpayers in the town of A, and hand it over, without consideration, without pretence of any public obligation or duty, to B, to be used by him in buying a farm, or building a house, or setting himself up in business, the case would be so clear that the common sense of everyone would at once say the limits of legislative power had been overstepped by a taking of private property and devoting it to a private use. That is the broad ground upon which such cases as *Allen v. Jay*, 60 Me. 124; *Lowell v. Boston*, 111 Mass. 454; and *The Citizens Loan Association v. Topeka*, Sup. Ct. U. S. (not yet reported), were decided. And yet, what rule of law do the courts find to aid them in thus revising the judgment of the legislature? Is it not clear that the question they

pass upon is the same question as that decided by the legislature, and that they must determine it in the same way the legislature has done, simply by the exercise of reason and judgment? What is it that settles the character of a given purpose, in respect of its being public or otherwise? It has been said that for the legislature to declare a use public does not make it so (17 N. H. 57), and the same may certainly be said with equal truth of a like declaration by the court. A judicial christening can no more affect the nature of the thing itself, than a legislative christening. Judging *a priori*, and without some knowledge of the wants of mankind when organized in communities and States, I do not quite understand how it could be predicated of any use, that it is *per se* public, as is said by Dixon, C. J., in *Whiting v. Sheboygan Railway Co.* (9 Am. Law Reg. (N. S.), 161).

Of light, air, water, etc., the common bounties of providence, it might, indeed, be said beforehand that they are in a very broad sense public; but it is not of such uses that we are speaking. Without knowledge of human nature, knowledge derived from experience and observation of what may be needful for the comfort, well-being, and prosperity of the people of the State advanced in civilization—and knowledge, gained in the same way, as to what necessary conditions of their welfare will be supplied by private enterprise, and what will go unsupplied without interference by the State—I do not see how any use could be said to be *per se* public, or how either a legislature, or a court, could form a judgment that would not be founded almost wholly upon theory and conjecture. No one doubts that the building and maintaining of our common highways is a public purpose. Why? Certainly for no other reason than that they furnish facilities for travel, the transmission of intelligence, and the transportation of goods. But why should the State take this matter under its fostering care, imposing upon the people a very great yearly burden in the shape of taxes for their support any more than many others that might be mentioned, of equal and perhaps greater importance to its citizens? Is it of greater concern to the citizen that he should have a road to travel on, when he desires to visit his neighbor in the next town, or transport the products of his farm or of his factory to market and bring back the commodities for which they may be exchanged, than that he should have a mill to grind his corn—a tanner, a shoemaker, and a tailor to manufacture his raw materials into clothing, wherewith his body may be covered? Doubtless highways are a great public benefit.

Without them I suppose the whole State would soon return to its primal condition of a howling wilderness, fit only for the habitation of wild beasts and savages. How would it be if there were no mills for the manufacture of lumber, no joiners or masons to build houses, no manufacturers of cloth, no merchants or tradesmen to assist in the exchange of commodities? These suppositions may appear somewhat fanciful, but they illustrate the inquiry, Why is the building of roads to be regarded as a public service, while many other things equally necessary for the upholding of life, the security of property, the preservation of learning, morality, and religion, are by common consent regarded as private, and so left to the private enterprise of the citizens? The answer to this question, surely, is not to be found in any abstract principle of law. It is essentially a conclusion of fact and public policy, the result of an inquiry into the individual necessities of every member of the community (which in the aggregate show the character and urgency of the public need), and the likelihood that those necessities will be supplied without interference from the State. Obviously it bears a much closer resemblance to the deduction of a politician than the application of a legal principle by a judge. * * *

"Enough has been said to show the delicate nature of the task imposed upon the court when they are called upon to revise the judgment of the legislature in a matter of this description. It is especially delicate for two reasons—first, because the discretion of the legislature, with respect to the whole subject of levying taxes, is so very large and their power so exclusive that it is not always easy to say when the limits of that discretion and power have been passed; and, second, because the rule to be applied is furnished, not so much by the law as by those general considerations of public policy and political economy to which allusion has been made. I do not deny the power and duty of the court, when private rights of property are in question, to settle those rights according to a just interpretation of the Constitution, and the discharge of that duty may involve a revision of the judgment of the legislature upon a question which like this partakes more or less of a political character. But before the court can reverse the judgment of the legislature and the Executive and declare a statute levying or authorizing a tax to be inoperative and void a very clear case must be shown.

"After the legislative and the executive have both decided that the purpose for which a tax is laid is public nothing short of a moral certainty that a mistake has been made, can, in my judgment, warrant the court in overruling that decision, especially when nothing better can be set up in its place than the naked opinion of the court as to the character of the use proposed."

These observations of that learned justice, though made in the centennial year of our independence, nearly a half century ago, near the beginning of the expansion of governmental activities in the interest of public welfare, are, we apprehend, as illuminating, touching the real nature of our present problem, as can be found in our legal literature. Plainly, since a correct solution of our present problem, because of its inherent nature, calls for the consideration of something more than pure legal principles, suggests that we exercise a great degree of caution to the end that we shall not usurp powers which do not constitutionally belong to us. This court has adhered steadfastly to the general rule, in common with other courts of our country, that a statute can not be declared unconstitutional unless it clearly so appears. Is not this rule of peculiar force in its application to the question of whether or not a legislative act authorizing the levy of a tax and the expenditure of public moneys so raised is for a public purpose? We are decidedly of the opinion that it is.

Having, we think, with a fair degree of success ascertained the real nature of our inquiry, and the degree of caution we are to exercise looking to the avoidance of the usurpation of powers of a coordinate branch of the State government, the legislature, let us inquire what are the considerations to be noticed as determinative of this case. It would be of little aid here to review the decisions of the courts with a view to merely ascertaining what particular purposes have been held to be public and what particular purposes have been held not to be public. We would be but led into a maze of conflict in the holdings touching the particular purposes involved in the reported decisions; and we may add, we think, also, into a maze of conflicting theories upon which such decisions are rested. In so far, therefore, as we shall notice the decisions and other authorities, it will be to the end that we have brought to our attention the broad general considerations which have influenced the courts in deciding the questions of public use in the particular cases brought before them, especially in recent years.

In *Sun Printing & Publishing Ass'n v. New York* (8 App. Div. 230, 235, 40 N. Y. Supp. 607), Justice Barrett, speaking for the court, in holding that the construction, by the expenditure of public funds raised by taxation, of a city railway, to be operated by others under a lease from the city, did not constitute the exercising of the taxing power for a purpose not public, observed:

"No test is furnished in the case cited for determining the precise scope of municipal action, and none has been suggested to us which is in any way satisfactory. In considering this question it must be premised that cities are not limited to providing for the strict necessities of their citizens. Under legislative authority they may minister to their comfort, health, pleasure, or education. They are not limited to policing the city, to paving its streets, to providing it with light, water, sewers, docks, and markets. They may also be required by the sovereign power to furnish their citizens with schools, hospitals, dispensaries, parks, libraries, and museums, with zoological, botanical, and other gardens. They may thus even gratify our ears with music of a summer afternoon or minister to our comfort by providing us with public baths. Expenditures in all these directions under legislative authority have never been questioned. Where, then, shall we draw the line? It would be very simple to draw it at those purposes for which precedent in the past can be found and to exclude all others. This test should be easy of application but would be essentially vicious and erroneous. Growth and extension are as necessary in the domain of municipal action as in the domain of law. New conditions constantly arise which confront the legislature with new problems. As the structure of society grows more complex, needs spring up which never existed before. These needs may be so general in their nature as to affect the whole country or the whole State, or they may be local and confined to a single county or municipality. In any case it is the duty of that legislative body which has the power and jurisdiction to apply the remedy. To hold that the legislature of this State, acting as the *parens patriae*, may employ for the relief and welfare of the inhabitants of the cities of the State only those methods and agencies which have proved adequate in the past would be a narrow and dangerous interpretation to put upon the fundamental law. No such interpretation has thus far been placed upon the organic law by the courts of this State. Whenever the question has been considered it has been universally treated in the broadest spirit."

The judgment rendered by the appellate division of the Supreme Court on that case was thereafter affirmed by the court of appeals. (*Sun Printing & Publishing Ass'n v. New York*, 152 N. Y. 257, 46 N. E. 499, 37 L. R. A. 788.)

In *Laughlin v. Portland* (111 Me. 486, 90 Atl. 318, Ann. Cas. 1916, 734, 51 L. R. A. (N. S.), 1143) there was involved the question of the city of Portland exercising its taxing power in bringing about the establishment and operation of a municipal fuel yard for the purpose of selling fuel to its inhabitants. In holding that such exercise of power was for a legitimate municipal purpose—that is, a public purpose, it being authorized by an act of the legislature—Justice Cornish, speaking for the court, made the following pertinent general observations:

"The courts have never attempted to lay down with minute detail an inexorable rule distinguishing public from private purposes, because it would be impossible to do so. Times change. The wants and necessities of the people change. The opportunity to satisfy those wants and necessities by individual effort may vary. What was clearly a public use a century ago may, because of changed conditions, have ceased to be such to-day. Thus the mill act, which came into being in the early days of our parent Commonwealth of Massachusetts and was adopted by our own State, was upheld as constitutional because of the necessities of those primitive times. The courts in later days have strongly intimated that were it an original question it might be difficult to sustain it in view of present industrial conditions. (*Murdock v. Stickney*, 8 Cush. 113; *Salisbury v. Forsaith*, 57 N. H. 124; *Jordan v. Woodward*, 40 Maine, 317.)

"On the other hand, what could not be deemed a public use a century ago may, because of changed economic and industrial conditions, be such to-day. Laws which were entirely adequate to secure public welfare then may be inadequate to accomplish the same results now."

The decision of the State court in that case was thereafter approved by the Supreme Court of the United States (*Jones v. Portland*, 245 U. S. 217, Ann. Cas. 1918, 660), the question of the purpose being public being reviewed by that court in the light of the due process of law guaranty of the fourteenth amendment of the Federal Constitution.

In *Gray, Limitation of Taxing Power*, at section 176, it is said:

"It is not possible to lay down any hard-and-fast rule by which to determine which purposes are public and which private. Hardly any project of public benefit is without some element of peculiar personal profit to individuals; hardly any private attempt to use the taxing power is without some colorable pretext of public good. Each case must be judged on its own facts, and any attempt at fixed definition must result in confusion and contradictions.

"The custom of the Government and the community is, perhaps, as definite a guide as can be indicated."

Omitting the first sentence, we quite agree with this statement of the learned author, but the suggestion that "custom" may be a true guide, it seems to us, leads us nowhere except to stagnation. This, it seems to us, would be wholly out of harmony with the thought permeating all of the later decisions, that new conditions and new public necessities are weighty considerations in determining the question of public purpose. For if custom is to be the controlling factor in deciding the question, then the consideration of new conditions and new necessities are of little moment in deciding the question. We are impressed with the observations touching custom as a guide made by Chester Collins Maxey in an article to be found in the January-February, 1918 number of the *American Law Review*, at pages 215, 219, as follows:

"The usage rule settles nothing. If it be rigidly applied, it precludes all possibility of growth and progress in this branch of the law; if, on the contrary, it be liberally construed, it reveals the courts exercising the very discretion which they doubtless employed it to conceal. No one is surprised, therefore, that in later cases the courts are found with very little to say about settled usage and very much to say about the necessity of recognizing growth in matters of government and law and of the deference to be paid to legislative determinations of public purpose."

We feel certain that these considerations, general as they are, lead irresistibly to the conclusion that the question of public purpose involved in this case, because of its inherent nature, because of the opportunity for difference of opinion as to whether or not the purpose is public in the sense of it being a legitimate function of government, and because of the question of public policy necessarily involved in it, is one which we are not permitted to render a different decision upon than that rendered by the legislature. Is there not abundant room for arguing that the development of our unoccupied lands suitable for agriculture, by a land policy which would encourage the settlement thereon of home-owning farmers, will materially contribute to the welfare of our people as a whole? Can it not be argued with a fair show of reason that not only will such a policy ultimately lead to the enhancement of the material wealth of the State, but that it will also make for better citizenship, better notions of necessity for law and order, and a sounder and saner patriotism? In the light of the debatable character of these questions, we are quite convinced that it is not within the province of the judicial branch of our State government to answer them in the negative. Our decision sustaining the workmen's compensation act of 1911, in *State ex rel. Davis-Smith Co. v. Clausen* (65 Wash. 156, 117 Pac. 1101, 37 L. R. A. (N. S.) 466, 2 N. C. C. A. 823, 3 N. C. A. 599) seems quite in harmony with, and to lend support to, the conclusion we here reach.

Some contention is made, rested upon the theory that this act discriminates in favor of agriculture as against other industries. This, to our minds, is no argument against

its constitutionality, since it can not be said that the legislature has wrongly decided that to so encourage agricultural development in our State will promote its public welfare. It hardly needs argument to demonstrate that no other industry is so closely related to the welfare of the people as a whole.

Some contention is made that the law is unconstitutional in that it violates the equal privileges and immunities guaranty of our Constitution, because it contemplates, in the disposition of the lands, the giving of preference rights to soldiers. All arguments that could be made against the law upon this ground could, with equal force, be made against every pension law that was ever enacted by the Congress of the United States, or any of the states. Manifestly this contention is without merit.

The contention that the law violates the fourteenth amendment of the Federal Constitution, we think, is answered by what we have already said. We must concede that the question of whether or not the tax is levied for a public use is a Federal as well as a state question. To take property by taxation for other than a public purpose is as much a violation of the due process of law guaranty of the fourteenth amendment to the Federal Constitution as of any similar provision of the State constitution. This is made plain by the decision of the Supreme Court of the United States in *Olcott v. Supervisors* (83 U. S. 678).

We are quite convinced that we are not privileged to now decide that this tax, and the expenditure of public funds raised thereby, is for other than a public purpose, the legislature having decided that is for a public purpose, which decision not being manifestly wrong, the writ will issue as prayed for.

Tolman, Bridges, Mitchell, Main, and Fullerton, JJ., concur.

Mackintosh, J. (dissenting).—As I gather the gist of my Brother Parker's opinion, it is that the court will not declare unconstitutional an act which calls for the collection of taxes to be used in the purchase and improvement of lands to be sold to private individuals, for the reason that the legislature has decided that such taxation is for a public purpose. Courts have found this an easy way to justify the laying of taxes to be utilized in ways that appeal to them as beneficial or agreeable to their ideas of proper commercial or economic development. The purpose of the act may be highly commendable, and did it not call for the payment from the pockets of the taxpayer of money in the possession of which he is supposed to be protected by constitutional limitations, as a land development plan, it would merit the approval of those interested; but to call it a public purpose is to stretch to the breaking point all fundamental ideas of what is meant by that term.

In *Lowell v. Boston* (111 Mass. 454, 15 Am. Rep. 39), an act was declared unconstitutional which authorized Boston to bond itself for \$20,000,000, to be loaned to the owners of land, the buildings upon which had been destroyed by fire, for the purpose of rebuilding the city. Repayment was secured by mortgages. The court said:

"The power of government, thus instituted to affect the individual in his private right of property whether by enacting contributions to the general means or by sequestration of specific property, is confined, by obvious implication as well as by express terms, to purposes and objects alone which the Government was established to promote, to wit, public uses and the public service. This power, when exercised in one form, is taxation; in the other, is designated as the right of eminent domain. The two diverse in respect of the occasion and mode of exercise, but identical in their source, to wit, the necessities of organized society; and in the end by which alone the exercise of either can be justified, to wit, some public service or use. It is due to their identity in these respects that the two powers, otherwise so unlike, are associated together in the same article. So far as it concerns the question what constitutes public use or service that will justify the exercises of these sovereign powers over private rights of property, which is the main question now to be solved, this identity renders it unnecessary to distinguish between the two forms of exercise, as the same tests must apply to and control in each. An appropriation of money raised by taxation, or of property taken by right of eminent domain, by way of gift to an individual for his own private uses exclusively, would clearly be an excess of legislative power."

In another portion of the same opinion it is said:

"The power to levy taxes is founded on the right, duty, and responsibility to maintain and administer all the governmental functions of the State, and to provide for the public welfare. To justify any exercise of the power requires that the expenditure which it is intended to meet shall be for some public service, or some object which concerns the public welfare. The promotion of the interests of individuals, either in respect of property or business, although it may result incidentally in the advancement of the public welfare, is, in its essential character, a private and not a public object. However certain and great the resulting good to the general public, it does not, by reason of its comparative importance, cease to be incidental. The incidental advantage to the public, or to the State, which results from the promotion of private

interests, and the prosperity of private enterprises or business, does not justify their aid by the use of public money raised by taxation, or for which taxation may become necessary. It is the essential character of the direct object of the expenditure which must determine its validity as justifying a tax and not the magnitude of the interests to be affected, nor the degree to which the general advantage of the community, and thus the public welfare, may be ultimately benefited by their promotion. The principle of this distinction is fundamental. It underlies all government that is based upon reason rather than upon force. It is expressed in various forms in the constitution of Massachusetts."

See also *Olcott v. Supervisors* (83 U. S. 678), *Citizens' Savings & Loan Association v. Topeka* (87 U. S. 655), *State ex rel. Garrett v. Froehlich* (118 Wis. 129, 94 N. W. 50, 99 Am. St. 985, 61 L. R. A. 345), *Auditor of Lucas County v. State ex rel. Boyles*, (75 Ohio St. 114, 78 N. E. 955, 7 L. R. A. 1196), *State ex rel. Walton v. Edmondson* (89 Ohio St. 351, 106 N. E. 41), *State ex rel. Griffith v. Osawkee Township* (14 Kans. 418, 19 Am. Rep. 99), *State ex rel. Garth v. Switzler* (143 Mo. 287, 45 S. W. 245, 65 Am. St. 653, 40 L. R. A. 280), *City of Geneseo v. Geneseo Natural Gas, Coal, Oil, Salt & Mineral Co.* (55 Kans. 358, 40 Pac. 655), *In re House* (23 Colo. 87, 46 Pac. 117, 33 L. R. A. 832), *City of Baltimore v. Keeley Institute* (81 Md. 106, 31 Atl. 437, 27 L. R. A. 646), *Mayor, etc., of Jersey City v. New Jersey R. Co.* (78 N. J. L. 72, 73 Atl. 609), *Fox v. Mohawk & H. R. Humane Society* (165 N. Y. 517, 59 N. E. 353, 80 Am. St. 767, 51 L. R. A. 681), *State ex rel. Board of Control of St. Louis School and Museum of Fine Arts v. St. Louis* (216 Mo. 47, 115 S. W. 534), *Feldman v. City Council of Charleston* (23 S. C. 63, 55 Am. Rep. 9), *Aetna Fire Ins. Co. v. Jones* (78 S. C. 445, 59 S. E. 148, 125 Am. St. 818, 13 L. R. A. (N. S.) 1147), *Trustees of Brooke Academy v. George* (14 W. Va. 420, 35 Am. Rep. 672), *Minnesota Sugar Co. v. Iverson* (91 Minn. 30, 97 N. W. 454).

It is needless to prolong a discussion already too ambiguous. On principle, and under the authorities, I can not agree that a public purpose is being served by this attractive bit of paternalistic legislation, and therefore dissent.

Mount, J., concurs with Mackintosh, J.

Holcomb, C. J. (concurring).—The purpose of the reclamation act, as set forth therein, is the settlement of undeveloped lands. The settlement and development of unimproved lands for agricultural purposes is certainly a public benefit. It means a direct increase in production of foodstuffs and an indirect increase in industry within the State. That the State generally will receive a benefit it seems to me there can be little doubt.

The fact that benefits will inure to certain classes of citizens within the State does not lessen the public benefit that will result from the operation of the statute. The benefit received by a class of citizens does not destroy the primary purpose the legislature had in enacting the statute to increase the agricultural products of the State and make productive lands heretofore unproductive.

Distinction can be made between the present case and *Lowell v. Boston* (111 Mass. 454, 15 Am. Rep. 39), quoted from in the dissenting opinion filed herein. There the purpose of the statute was to raise funds to be loaned to owners of land, the buildings upon which had been destroyed. The purpose in that case was to rebuild a devastated portion of a city. It was peculiarly a private benefit, although to a large number of inhabitants. It is not difficult to understand that the benefits to be derived from the expenditure of money in that case could hardly be conceived as belonging to the public generally. While there might be a remote public benefit, there hardly could be such a direct and general one as under the statute here in question.

For the above reasons I concur with the majority.

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